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1997

# Bridges to Sustainability: Business and Government Working Together for a Better Environment

Luis Gomez-Echeverri

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# **Bulletin Series**

## ***Yale School of Forestry and Environmental Studies***

NUMBER 101

### **Bridges to Sustainability:**

#### **Business and Government Working Together for a Better Environment**

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A Contribution of the Yale/UNEP  
Program on Public-Private Partnerships

Joseph A. Miller and Jane Coppock, Bulletin Series Editors

Luis Gomez-Echeverri, Volume Editor



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# *Contents*

<b>ACKNOWLEDGMENTS</b>	4
<b>SECTION I: TO WHAT EXTENT HAVE THE GOALS OF THE EARTH SUMMIT ON THE ROLE OF THE PRIVATE SECTOR BEEN MET?</b>	5
<b>Moving Toward Sustainable Development: The Private Sector's Crucial Role</b> Maurice F. Strong	6
<b>SECTION II: HOW CAN THE PRIVATE SECTOR BE ENCOURAGED TO PLAY A GREATER SUPPORTING ROLE IN SUSTAINABLE DEVELOPMENT?</b>	17
<b>Private Capital Flows: New and Additional Resources for Sustainable Development</b> Bradford S. Gentry and Daniel C. Esty	18
<b>The Role of the Private Sector in Sustainable Infrastructure Development</b> Theodore Panayotou	46
<b>Incentives for Private Sector Financing of Sustainable Development</b> David Pearce	70
<b>Steering Business Toward Sustainability: New Strategic Choices Through the Zero Emissions Approach to Biomass Production</b> Gunter Pauli	84
<b>SECTION III: WHAT ROLE CAN CAPITAL MARKETS AND FINANCIAL INSTITUTIONS PLAY?</b>	104
<b>Eco-efficiency and the Financial Markets</b> Stephan Schmidheiny and Federico J. L. Zorraquin	105
<b>Sustainable Development and the Private Sector: A Financial Institution Perspective</b> L. Enrique Garcia	130
<b>SECTION IV: THE EMERGING RECORD: SUCCESS STORIES OF PRIVATE SECTOR LEADERSHIP AND ACTION</b>	142
<b>Business Progress Toward Sustainable Development</b> Stephan Schmidheiny, Rodney Chase, and Livio De Simone	143
<b>Engaging the Private Sector Through Public-Private Partnerships</b> The Honourable J. Hugh Faulkner	157
<b>SECTION V: A CAUTIONARY NOTE</b>	173
<b>The Private Sector as a Panacea and Other Myths</b> Luis Gomez-Echeverri	174

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UNDP's partner in the Program on Public-Private Partnerships is the Yale School of Forestry and Environmental Studies. The School has a long history of engaging the private sector in questions of environmental management. In the 1950s and 60s, it brought company managers to campus to join faculty in an ongoing seminar on Industrial Forestry. Since the 1970s Conoco Corporation has supported Yale's Seminar on Society and Natural Resources, led by Professors William R. Burch, Jr., and Joseph A. Miller of the School of Forestry and Environmental Studies. The seminar has focused on the relationship between social systems and natural systems, and on the question of what kinds of individual-social value systems and institutions must be in place to achieve sustainability.

The 1990s have seen an explosion of programs at the School focusing on the role of the private sector in environmental management. The Industrial Environmental Management Program, the Corporate Environmental Leadership Seminar for senior managers from industry and government, the Program on Solid Waste Policy, the Journal of Industrial Ecology and the Yale Center for Environmental Law and Policy are all actively engaged in work with the private sector. The Yale/UNDP Program on Public-Private Partnerships builds on this strong foundation.

Outgoing Dean Jared Cohon has given his strong support and advice to the formative stages of the Partnership, as has Professor John Gordon, acting Dean and director of the Steering Committee and Board of the Yale/UNDP Program on Public-Private Partnerships.

Thanks to the editors of the Bulletin Series, Professor Joseph A. Miller and Assistant Dean Jane Coppock, for their enduring and hands-on support for this Bulletin. Their leadership and intellectual support have turned this and other volumes in the newly revitalized Bulletin Series into an exciting and important contribution to writing on the environment.

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Luis Gomez-Echeverri  
Volume Editor

## *Section I: To What Extent have the Goals of the Earth Summit on the Role of the Private Sector Been Met?*

In this section, Maurice F. Strong, Secretary General of the United Nations Conference on Environment and Development held in Rio de Janeiro in 1992, reviews the progress made since this milestone in the world's efforts to move toward sustainable development, with particular reference to participation by the private sector. While recognizing that there have been important demonstrations that sustainable development is possible, Mr. Strong calls for a more determined effort to make the goals of the Earth Summit a success. He also underscores the important role that the United Nations and other international organizations can play if properly reformed to play that role, a significant statement coming from the person the Secretary General of the United Nations has assigned the role of reforming the UN system to meet the challenges of a changing world.

## Moving Toward Sustainable Development: The Private Sector's Crucial Role

Maurice F. Strong  
United Nations

### ABSTRACT

This chapter reviews the progress made since the Earth Summit in the world's efforts to move toward sustainable development, with particular reference to developments in the private sector, which is increasingly recognized as a key player. The positive demonstrations that sustainable development is possible are still falling short of the fundamental change of course that is needed. A reformed United Nations and its organizations and agencies have an indispensable role to play in this change.

This year we mark the fifth anniversary of the United Nations Conference on Environment and Development—the Earth Summit—which was held in Rio de Janeiro in June 1992. And it is the twenty-fifth anniversary of the UN Conference on the Human Environment held in Stockholm, Sweden. It was the 1972 meeting in Stockholm that first put the environment issue on the international agenda. This is therefore an especially opportune time to re-examine our progress and prospects regarding global environmental issues.

One of the most notable achievements of the Earth Summit was the success it had in bringing all the “players”—governments, industry, civil society—to the table for discussions of the pressing issues facing the world. The conference put an official stamp of approval on the growing move to make decision-making more inclusive. And without a doubt one of the most important components in the world's efforts to move toward sustainable development is the private sector.

### FROM STOCKHOLM TO RIO

Before I review the new role being played by the private sector, let me recap the events and developments leading up to the Earth Summit. The Stockholm conference led to a proliferation of new environmental initiatives and the creation of the United Nations Environment Programme, headquartered in Nairobi, Kenya, as well as to national environmental ministries or agencies in most countries. Despite progress in many areas, it became evident by the mid-1980s, however, that the environment was still deteriorating overall and that the economic behavior largely responsible for this continued unchecked.

In response, the United Nations General Assembly called for the establishment of a World Commission on Environment and

Development; it was chaired by Norway's Gro Harlem Brundtland, one of the world community's most enlightened and respected leaders. The Commission's report, *Our Common Future*, made the case for sustainable development as the only viable pathway to a secure and hopeful future for the human community. Its recommendations led to a decision by the UN General Assembly in December 1989 to hold a conference on the twentieth anniversary of the Stockholm conference and to accept the offer of Brazil to host it. To underscore its importance, it was decided that the meeting should be held at the Summit level.

The Earth Summit proved to be a remarkable event. Never before had so many of the world's political leaders come together. And the fact that they were considering issues critical to the planet's future put these matters under an enormous international spotlight. The pressure generated by an unprecedented level of people's participation and media coverage helped move governments to agree on a set of principles, "The Declaration of Rio," and a comprehensive program of action to give effect to these principles—Agenda 21. It also produced agreement on two historic framework conventions, one on climate change and the other on biodiversity, which have since come into effect. And it launched a negotiating process that subsequently led to agreement on a Convention on Desertification, an issue of special importance to many developing countries, particularly the arid regions of sub-Saharan Africa.

Despite shortcomings, the agreements reached at Rio represent the most comprehensive program ever agreed to by governments for the shaping of the human future. And the fact that most of them were represented by their heads of government gave the agreements a unique degree of political authority. Unfortunately, as experience since then has demonstrated, it does not ensure their implementation.

So far, the record is mixed. There have been many positive demonstrations that the transition to sustainable development called for at Rio is possible. But these examples still fall short of what is required to effect the fundamental change of course. To some degree this is understandable. Fundamental change does not come quickly or easily: the five years that have elapsed since the Earth Summit, and even the twenty-five years since the Stockholm Conference, are too short to have expected such fundamental change to have occurred. Nevertheless, we cannot afford to be complacent in light of evidence that we remain on a path that is not sustainable while the driving forces of population growth in developing countries, and unsustainable patterns of production and consumption of industrial countries, persist.

*The agreements reached at Rio represent the most comprehensive program ever agreed to by heads of government for the shaping of the human future. The agreements have a unique degree of political authority; unfortunately, it does not ensure their implementation.*



Climate change is a case in point. Although the latest report of the Intergovernmental Panel on Climate Change points to growing scientific evidence that human activities are a major contributor, it is apparent that even the modest targets proposed by the parties to the Convention on Climate Change will not be reached and, indeed, that carbon emissions will continue to increase. It is essential and timely, therefore, that in this important anniversary year we take a fresh look at the changes that have occurred since Stockholm and Rio and at the effect they should have on our policies and actions to achieve sustainability. The forces shaping our future are complex and diverse and do not lend themselves to simplistic analysis or solutions.

I believe three major factors need to be highlighted:

- The response of growth in the global economy and movement of the primary locus of growth to the rapidly developing countries of Asia and Latin America. As this growth is based largely on the experience and example of more mature industrial countries, it is producing acute environmental problems and undermining the sustainability of development in these countries, while contributing increasingly to global environmental risks;
- The severalfold increase in private investment in developing countries, which is now some four times greater than official development assistance (ODA). This has given rise to a growing dichotomy between more rapidly developing countries, for which ODA is becoming relatively less important, and the least developed countries, particularly those of sub-Saharan Africa, which continue to depend on it heavily; and
- Increasing evidence that traditional governance and management models, based largely on individual sectors and disciplines, are inadequate for the management of the complex system of cause-and-effect relationships on which the successful transition to sustainable development depends.

## THE CRUCIAL ROLE OF THE PRIVATE SECTOR

Each of the phenomena just mentioned underscores the critically important role of the private sector in the movement toward sustainable development. If the rapidly developing countries of Asia and Latin America do not make the transition to sustainable development, there is little prospect that the goal of global sustainability can be achieved. And since private initiative is the primary driving

*We cannot afford to be complacent in light of evidence that we remain on a path that is not sustainable while the driving forces of population growth in developing countries, and unsustainable patterns of production and consumption of industrial countries, persist. Three major forces are shaping our future: the movement of the primary locus of economic growth to the developing countries of Asia and Latin America; the severalfold increase in private investment in developing countries; and the inadequacy of traditional governance and management models.*

force in these rapidly growing economies—and private capital their principal source of financing—the private sector must become the primary vehicle for the achievement of sustainable development.

This is particularly true as more and more developing countries move to privatization in such key sectors as water, waste disposal, electric power, and transport. The very scale and intensity of the sustainable development challenge requires a heavy reliance on technological solutions, for which the private sector is the primary vehicle. At the same time, the systemic nature of sustainable development requires much greater cooperation both amongst key industry actors and financial institutions and between them and governments.

Although there has been a significant increase in the awareness of these issues since the Earth Summit, this cooperation still occurs far more at the level of rhetoric than concrete action. So, while more and more leaders in industry and government are talking of change, the powerful forces of inertia continue to propel us overall along a pathway that is unsustainable.

#### THE RECORD TO DATE

Nevertheless, there have been some very positive developments in the private sector since the Earth Summit that demonstrate that the transition to sustainability is feasible and economically, as well as environmentally, advantageous. The initiative and entrepreneurship of business have produced an impressive number of practical examples of success we can build on, as well as new institutional mechanisms to facilitate and support the process. Let me cite a few of these.

The World Business Council for Sustainable Development (WBCSD) has taken an enlightened lead in stimulating the commitment to sustainable development on the part of its membership of more than 120 multinational corporations. It has also developed several national and regional counterparts. A recent example in Brazil is the National Business Council for Sustainable Development, which brings together more than 90 of the country's leading corporations. WBCSD has produced two major documents following its influential report to the Earth Summit, *Changing Course*. One of these, *Financing Change*, makes a strong and compelling case for the use of markets to finance sustainable development.

More recently, the WBCSD report *Signals of Change* documented specific examples of business progress toward sustainable development based on the concept of eco-efficiency. This is a management approach designed to produce greater efficiency in the use

*Private initiative is the primary driving force in the rapidly growing economies of Asia and Latin America where the transition to sustainable development must be achieved. The private sector must become the primary vehicle for the achievement of sustainable development.*

of energy, materials, and services and in the prevention, disposal, and recycling of wastes so as to create value both for the companies concerned and for society. WBCSD is also promoting the use of life-cycle analysis to reduce the environmental impacts of products and production processes, and is promoting the development of a global network of business organizations committed to sustainable development. And it is helping its members identify and pursue new business and investment opportunities based on the application of sustainable development principles.

Among the specific examples of progress documented in *Signals of Change* are:

- The successful experience of 3M's Pollution Prevention Pays program, introduced in 1975, which has prevented more than 1.4 billion pounds of releases to the environment while saving the company more than US\$750 million;
- Sony Corporation's "Green Plus" project, which has resulted in the design of a new television set series that uses 14% less material than the previous design. Sony has a goal of making all its products environmentally friendly by the end of 2000;
- Adoption by Fiat Auto of a policy of reducing pollution and other environmental impacts at its own plants and requiring that its suppliers accept high environmental standards;
- Adoption by the chemical industry of the Responsible Care program to improve environmental performance; the US chemical industry alone has reduced emissions of toxic chemicals by more than 60% in the past six years while production grew by 20%.

Business has also made encouraging progress toward developing closed-loop production systems, including sponsorship by the pulp and paper industry of a major project by the International Institute for Environment and Development, designed to develop a sustainable paper cycle.

In the field of energy, which is at the center of many of the most important environmental problems, including climate change, the E7—the seven principal electric power utilities in the world—has initiated a program to promote energy efficiency and sustainable development. A number of individual companies, including Canada's Ontario Hydro and Brazil's Eletrobras have instituted major efficiency programs that have brought about substantial reductions in energy use by both the companies and their

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customers, while contributing to improved financial performance.

More than 2,500 companies worldwide have signed the Business Charter for Sustainable Development adopted by the International Chamber of Commerce in 1990, and many international and sectoral industry associations have adopted their own charters. The World Tourism and Travel Council, representing the world's largest single industry—one that has an especially close relationship with the environment—has, in cooperation with the Earth Council, launched its own Agenda 21. And the critically important road transport industry, through the International Road Transport Union, has taken similar action. The engineering profession, through its principal international professional bodies representing more than 15 million members, is likewise committed to sustainable development.

## GOVERNANCE FOR CHANGE

At the level of governance, one of the most promising and innovative developments has been the establishment of some 100 National Councils for Sustainable Development, or similar bodies, based on the recommendation of Rio's Agenda 21. These bring together representatives of various sectors of civil society to consult with each other and with governments and to come up with a national agenda and action plan for sustainable development. The Earth Council, formed as a direct result of the Earth Summit, is playing a unique role in catalyzing and facilitating the development of these networks and linkages amongst them. It took the lead in organizing the Rio + 5 Forum in March 1997 and the first regional meetings of National Councils for Sustainable Development of the developing world.

The Earth Council has taken a number of other initiatives of particular interest to business. One of these is in the area of emissions trading through the design of the Global Emissions Trading System and the creation, in cooperation with the government of Costa Rica, of a marketable debt instrument based on the use of tropical forest areas to provide offsets for carbon emissions in the United States and elsewhere. While the concepts of emission trading and "joint implementation" are still controversial at this point, they offer a promising opportunity to provide the most cost-effective means of effective reductions in the emissions of carbon and other harmful substances while channeling new financial resources to developing countries and helping them conserve their precious biological resources.

At a time when all governments are experiencing severe financial constraints, it is particularly important that better use be made of

*The concept of eco-efficiency is a management approach designed to produce greater efficiency in the use of energy, materials, and services and in the prevention, disposal, and recycling of wastes so as to create value both for the companies concerned and for society. WBCSD's recent report, Signals of Change, documents specific examples of business progress toward sustainable development based on this concept.*

existing resources. A recent study commissioned by the Earth Council makes it clear that literally hundreds of billions of dollars are being used by both industrial and developing countries today to subsidize activities that are unsustainable in environmental terms and unnecessarily costly and wasteful in economic terms.

The world is spending at least \$700 billion a year on subsidies in water, agriculture, energy, and road transport, much of it providing disincentives to sustainable development. Indeed, some—including subsidies on water and energy in developing countries—actually impair access and increase the cost of these vital services to the poor. Redeployment of these subsidies could provide positive incentives to sustainable development while releasing more than enough funds to enable industrial countries to increase ODA and developing countries to meet the internal costs of a transition to sustainable development.

Developing countries serve as custodians of most of the biological resources on which the sustainability and well-being of the world community depend. The indispensable services they provide have always been taken for granted and treated as free goods. We must now begin to place an economic value on them if we are to expect developing countries to maintain them largely for the benefit of the rest of the world. Doing so would not only ensure the conservation of these precious resources; it would provide an additional source of revenue flows to these countries. This would represent a wise investment by the international community, not an act of aid or charity. And it would present a new generation of opportunities for private entrepreneurship and investment.

The old maxim that “knowledge is power” is now being accompanied by the realization that “knowledge is money” and, therefore, a primary economic resource. The growing drive to convert knowledge into proprietary intellectual property could reduce the total stock of knowledge and restrict access to products of research and development. This could especially disadvantage those, particularly in developing countries, whose needs are greatest. Yet it is in our common interest to ensure that these individuals and groups have access to the best state-of-the-art technologies so that in the course of their own development they do not add unnecessarily to the pressures on the Earth’s environment and resources.

Developing countries need support for development of the R&D capabilities they require to make the transition to sustainability. Here again the private sector is the principal vehicle for technology cooperation and transfer, but its role must be facilitated by supportive policies on the part of government and financial assistance to developing countries.

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## THE INTERGOVERNMENTAL FRAMEWORK

Multinational organizations, and particularly the United Nations and its specialized agencies, including the United Nations Development Programme, the World Bank and the International Monetary Fund, provide the basic international framework for cooperative arrangements and the mobilization of resources required to support developing countries in their transition to sustainable development. The role of these organizations is essential to the effective functioning of our global technological civilization, management of our relationships with each other, and our impacts on the Earth's environment and life-support systems.

World government is neither necessary nor desirable, but we need a system for management of issues that can at best be managed cooperatively. It is not necessary for nations to yield to international organizations, but rather to use such organizations to facilitate the voluntary exercise of national sovereignty in cooperation with other nations in those areas where individual nations, even the most powerful, cannot effectively exercise it alone. Thus, international organizations are the servants, not the masters of nation states, which remain the principal repositories of sovereignty in the global system of governance.

The United Nations is the centerpiece of this system of organizations, which includes a large number of regional and special-purpose groups that are not part of the United Nations system but in most cases have close and cooperative links with it. As the realities of interdependence in economic, security, environmental, and other areas of human activity have made it necessary or desirable for nations to cooperate, the objective need for more effective international institutions has become clearer than ever, and this need can only increase in the period ahead. Yet support for United Nations organizations has sunk to the lowest level since they were created more than 50 years ago.

To be sure, the United Nations and its organizations and agencies need to change to reflect the immense transformations that have taken place in the world since they were created, and to meet the growing needs of the world community as it moves into the 21st century. The need for this reform has long been recognized and has been subject to extensive analysis and a wide range of ideas and recommendations. Now, under the leadership of Secretary General Kofi Annan, major reforms have been initiated at the level of the Secretariat, while General Assembly President Ambassador Ismail Razali is leading an accelerated reform process on the part of member states, where ultimate responsibility resides. At the same time, World Bank President James Wolfensohn has initiated radical

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changes designed to improve the effectiveness of the world's leading development finance agency. And virtually all other UN agencies and organizations, including the United Nations Development Programme, have undertaken programs of change and reform.

## NEW PARTNERSHIPS

An important feature of reform in all these organizations is the necessity of developing stronger links with the private sector and the various organizations of civil society, along with better mechanisms for consultation and cooperation with them. Already a number of promising and innovative partnerships have been developed by UN organizations. UNDP has been particularly active in promoting these. In 1995, it launched its Public-Private Partnerships for the Urban Environment. By identifying urban environmental problems which can be turned into viable business opportunities, this program leverages large amounts of investment with a relatively modest amount of ODA resources. And at the recent Rio + 5 Forum, UNDP signed a Partnership Agreement with the World Business Council for Sustainable Development.

Indeed, these public-private partnerships represent the wave of the future as the principal means of implementing sustainable development. In most cases, the resources available for funding of sustainable development come principally from private sources—not only investment funds, but funding from private philanthropic sources, including foundations supported by private corporations. In the United States alone corporate foundations now provide some \$6 billion of philanthropic funding. Just as private investment has overtaken ODA as the main source of financial flows to developing countries, private foundations and voluntary organizations now provide more concessional funding to developing countries than the United Nations does.

This is not to say that the role of the United Nations in sustainable development has been diminished. On the contrary, the need for the kind of leadership and facilitating services that only the United Nations can provide is greater than ever because of the increasingly diverse sources of funding and technical assistance. The capacity to take the lead in mobilizing resources from a variety of sources around particular projects and programs and in facilitating the targeting and effective use of such resources gives the UN a major multiplier effect in the use of the resources under its control. Thus UNDP's work in helping client countries to identify and prepare major projects for investment attracts capital many times in excess of its own expenditures.

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The International Finance Corporation, the private sector investment organization of the World Bank Group, has played a key role in supporting the flow of private capital to developing countries by taking a minority investment in promising enterprises and helping to develop domestic capital markets. The Global Environment Facility (GEF), the only new funding organization set up especially to finance sustainable development, is a unique tripartite partnership between the World Bank, UNDP, and the United Nations Environment Programme. It provides incremental funding to support the sustainable development of major projects in which the total investment is many times greater than that provided by GEF.

UN conferences have made a major contribution by making environment and sustainable development important issues for governments and the public and by opening up new channels for participation of civil society and private business. At the Earth Summit, business was directly and influentially involved in preparations for the conference through the Business Council for Sustainable Development. And an unprecedented number of other civil society organizations participated at Rio, both directly in the conference and at the Global Forum that was held at the same time. This led to the establishment of a new generation of alliances and partnerships both amongst these organizations and between them and governments.

One of the most promising of these has been the development of local Agenda 21s by some 1,800 cities and towns around the world through the leadership of the International Council for Local Environmental Initiatives. These efforts have brought together representatives of local governments with business, community, and other local organizations. They provide one of the most promising and effective means of linking action at the local level—where most action must take place—with the global issues defined by Rio's Agenda 21. This global-local interaction is one of the most encouraging and promising developments to have occurred as a result of the Earth Summit. And it opens up an immense range of new opportunities for private-public partnerships at the local level as well as partnerships that link global, national, and local levels. National Councils for Sustainable Development are proving to be extremely valuable instruments for forging these linkages.

As the environmental movement has evolved from Stockholm through the Brundtland Commission to the Earth Summit in Rio de Janeiro, we have enlarged the context in which we must deal with the challenge of protecting and improving the environment to embrace the complex system of relationships through which our economic aspirations and behavior must be reconciled with our

*The UN and its organizations and agencies need to change to meet the growing needs of the world community. An important feature of this reform is the necessity of developing stronger links with the private sector and the various organizations of civil society, along with better mechanisms for consultation and cooperation with them. Public-private partnerships represent the wave of the future as the principal means of implementing sustainable development.*



environmental and social goals. What we have come to call sustainable development provides the larger framework for achieving a positive synthesis among these three dimensions of development. This is no mere passing phase, but a fundamental process of change that is essential if we are to move onto the pathway to a secure and sustainable future in the new millennium. The traditional boundaries between the roles of government and the private sector have already been breached and must now give way to a new system of cooperative arrangements extending from the local to the global levels of governance.

The United Nations system and its organizations and agencies have a role in this system that is indispensable and that no other organization can play. The current reform process must equip it for this role.

#### MAURICE F. STRONG

Maurice Strong is a national of Canada with long-standing ties to both the private and public sectors. His distinguished career as an international civil servant includes serving as Secretary General of the UN Conference on the Human Environment from 1970 to 1972; becoming the first Executive Director of the United Nations Environment Programme (UNEP) in Nairobi, Kenya from 1973 to 1975; serving as both Under Secretary General of the United Nations and Executive Coordinator of the United Nations Office for Emergency Operations in Africa from 1985 to 1986; and presiding as Secretary General of the 1992 UN Conference on Environment and Development (The Earth Summit). He is presently leading the UN Reform Project for the UN Secretary General. Mr. Strong until recently was Chairman and Chief Executive of Ontario Hydro; from 1992 to 1995 he was President and Chairman of the Canadian International Development Agency (CIDA). He has held many other distinguished positions.

## *Section II: How Can the Private Sector be Encouraged to Play a Greater Supporting Role in Sustainable Development?*

In this section a group of distinguished scholars and practitioners highlight the major role that the private sector is already playing in sustainable development. The message throughout, however, is that the private sector is playing a major role only in selected countries and sectors. The articles provide a menu of measures, strategies, and policies for countries to follow in order not only to attract private sector investment but also to orient the private sector toward activities that are supportive of sustainable development. Finally, this section also presents a look at one particular sector by focusing on the world of plantation industries and their potential to become one of the economic powerhouses of the 21st century.

## Private Capital Flows: New and Additional Resources for Sustainable Development

Bradford S. Gentry  
Yale /UNDP Program on Public-Private Partnerships

Daniel C. Esty  
Yale Center for Environmental Law and Policy

### ABSTRACT

Private capital flows have the potential to take us far down the path to sustainable development—if we recognize and act upon the opportunities presented. This will only happen where public and private sectors work closely in partnership. The purpose of this paper is to help start this process. First, a roadmap to recent trends in private capital flows is presented: amounts, types, locations, sectors, and sources. Second, the environmental implications of the shift to private capital—good and bad—are explored. Finally, an action agenda is offered to the private and public actors whose joint efforts are critical for realizing the potential of private capital as an engine of sustainable development.

Agenda 21 calls for \$125 billion per year in “new and additional financial resources” to go to developing countries to put them on a path to sustainable development (Chapter 33). The funds were to come on “grant or concessional terms” from developed countries. Private investment was only to be “encouraged.”

What has happened since Rio has been a surprise to almost everyone—more than \$125 billion has gone from developed to developing countries every year, but from private, not public sources (see Figure 1 below). While Official Development Assistance (“ODA”) has declined from 0.34 percent of developed country GNP in 1992 to 0.27 percent in 1995 (Commission on Sustainable Development, 1997), private capital flows have grown to over 86 percent of the total capital flows to developing countries as of 1996 (World Bank 1997).

Private investment is not the same as ODA. It needs to earn a commercial return, often being paid by local sources. It goes when and where the markets drive it, rather than in accord with government priorities. The processes by which it is allocated are hidden from and often poorly understood by governments and the general public. Relatively little information has been gathered on the environmental and social impacts of its recent increases in the developing world.

At the same time, private investment carries with it many benefits (CSD 1997). It can lead to increased local wealth. It is often

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accompanied by new technologies and management techniques that can improve both productivity and environmental performance.

### NATURE OF PRIVATE CAPITAL FLOWS TO DEVELOPING COUNTRIES: NOT MONOLITHIC

To many in the environmental community—as well as in much of the public sector—the “private sector” appears as one. It is not. The business world is made up of many different actors pursuing different versions of their commercial self interest. Understanding the major categories of differences is critical to capturing the opportunities presented by increased private capital flows.

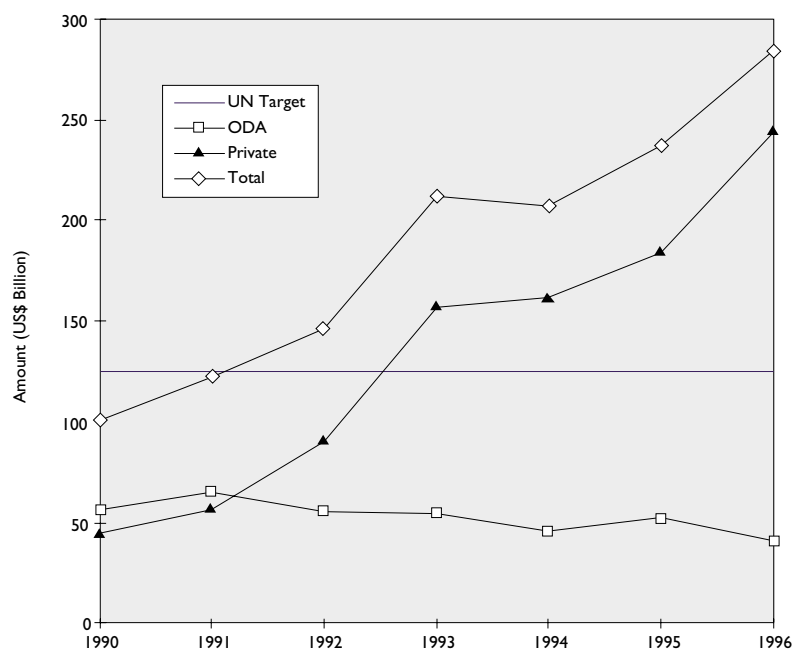
### AMOUNTS: SIX TIMES ODA IN 1996

As shown in Figure 1, while official assistance is stagnant and trending downward in real terms, private capital flows to developing countries have increased dramatically in the last five years.

The shift from foreign aid-based development to privately financed economic growth has occurred for a number of reasons. First, governments around the world have evolved toward a greater market orientation. Many governments are now working to privatize formerly public enterprises. In addition, most national governments now accept that liberalized trade and an openness to foreign investment are likely to produce better economic results than an internal focus with an economy based on import substitution.

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Figure 1 Agenda 21 Target and Capital Flows (1990-1996)



### TYPES: FDI, PORTFOLIO, AND DEBT

Discussion about global private capital flows often centers on “foreign direct investment.”

FDI — reflecting investments by foreign companies in overseas subsidiaries or joint ventures — is indeed an important dimension of private international finance and has been the largest portion of the capital flows to emerging markets over the past several years.

But, as shown in Figure 2 (next page), FDI is not the only way investment funds move internationally. To understand private capital flows, one also must consider portfolio equity investments and debt finance (commercial loans, bonds). FDI represented 45 percent of the total private capital flows to emerging markets in 1996 (World Bank 1997). Debt finance was an additional 33 percent of the total. Portfolio equity investments made up most of the balance or 19 percent of total international private investment going to the developing world.

### ENVIRONMENTAL LINKAGES VARY ACROSS INVESTMENT TYPES

These different types of private international finance vary with regard to the depth and character of their links to environmental issues (Gentry et al. 1997). The most direct and significant linkages lie with FDI (and any associated commercial loans). FDI often goes into facilities (power stations, mines, manufacturing plants) that pose clear and immediate issues of pollution control, ecological protection, resource consumption and public health.

A more tenuous connection exists between environmental factors and portfolio investments in overseas companies' shares. Nevertheless, environmental performance may affect—negatively or positively—the value of a portfolio equity investment. Pressure created for short-term profitability by foreign investors, for example, may create incentives to cut environmental corners. In addition, financial analysts and investors may not fully understand the links between eco-efficiency (Schmidheiny 1992) and improved competitiveness and financial performance (Schmidheiny and Zorraquin 1996; Gentry and Fernandez 1997). By failing to bid up the value of companies that are investing in environmental quality, they may create disincentives for attention to environmental performance. Finally, companies that sell in markets with eco-sensitive consumers or that have differentiated their products on the basis of “green” attributes may find that foreign investors, concerned about the value of their stake in the company, will be attentive to environmental performance.

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Finally, the connection between debt and environmental performance varies widely. Commercial lending to private companies gives the bank a stake in the borrower's financial success (or, more precisely, failure) and thus an incentive to consider environmental risks that is not dissimilar to that of a foreign direct investor. Other debt holders will be relatively more or less attentive to environmental performance depending on the nature of the instrument they hold (which affects how insulated they are from ups and downs in the company's value), the centrality of environmental performance to the success of the enterprise in which they have invested, and other factors. Although governments are often among the worst polluters, investors in government-issued bonds are likely to be relatively uninterested in environmental concerns because the connection between governmental environmental performance and the ability to repay is remote (Gentry et al. 1997).

Given this diversity in foreign investment, some of the discussion that follows addresses private international finance (PIF) broadly. However, the major emphasis is on FDI. It represents the largest share of private capital flows currently going to emerging markets and the element of PIF that has the most direct links with the environment. Over time, however, more attention will need to be paid to portfolio flows of equity and debt as these represent much larger potential investment pools for improving environmental performance.

*Investors may not fully understand the links between eco-efficiency and improved competitiveness and financial performance.*

Figure 2 Types of Private Capital Flows to Emerging Markets

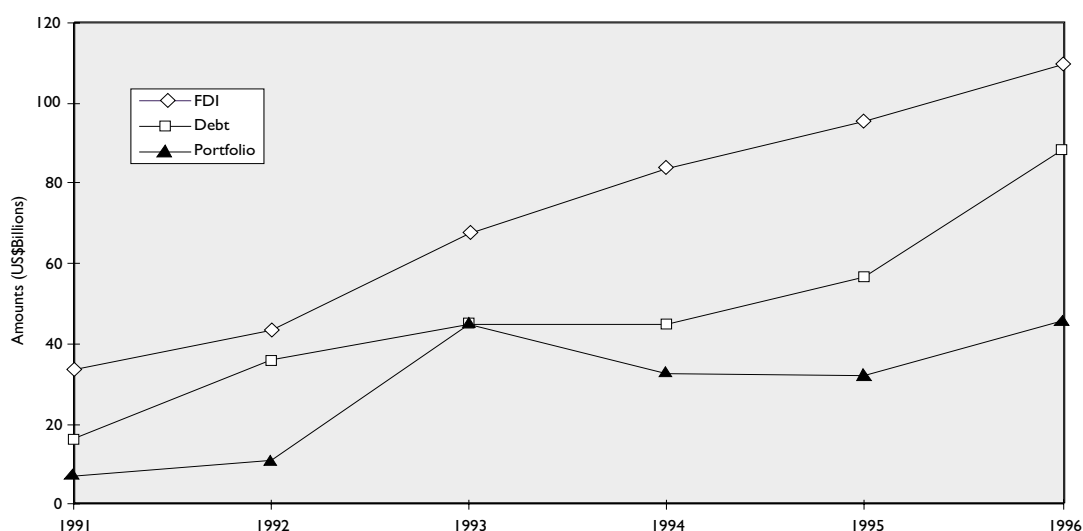
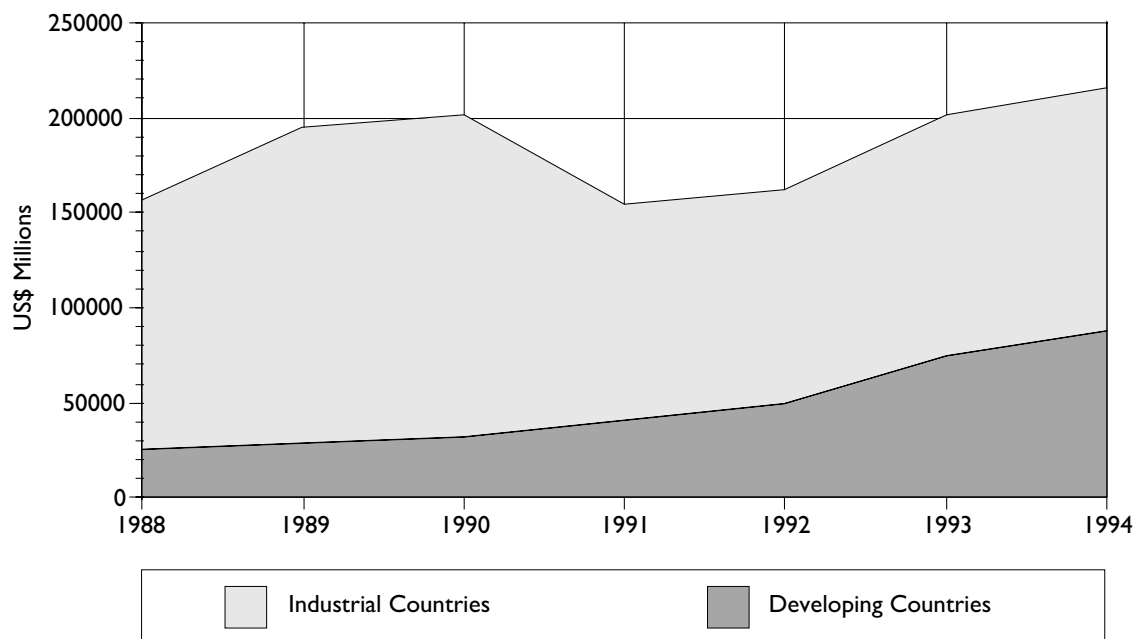


Figure 3 World FDI Flows by Destination, 1988-1994



Source: Yale Center for Environmental Law and Policy, IMF Balance of Payments Statistics Yearbook 1995, UNCTAD World Investment Report 1995

#### LOCATIONS: CONCENTRATED, BUT EXPANDING

It is important to start with the recognition that most of the flow of international capital is actually among OECD countries. Total world market capitalization is about 18 trillion dollars. Of this total, only 1.8 trillion is in developing countries and emerging markets (IFC 1996). As Figure 3 above demonstrates, nearly three-quarters of global FDI flows in recent years have gone to industrialized countries. Similar patterns exist for portfolio flows (Figure 4).

While North-to-North capital flows dwarf North-to-South flows, the developing world receives a significant and growing share of global flows. For example, in 1995, developing countries took in approximately 90 billion (38%) of the 240 billion dollar total of worldwide FDI (World Bank 1996).

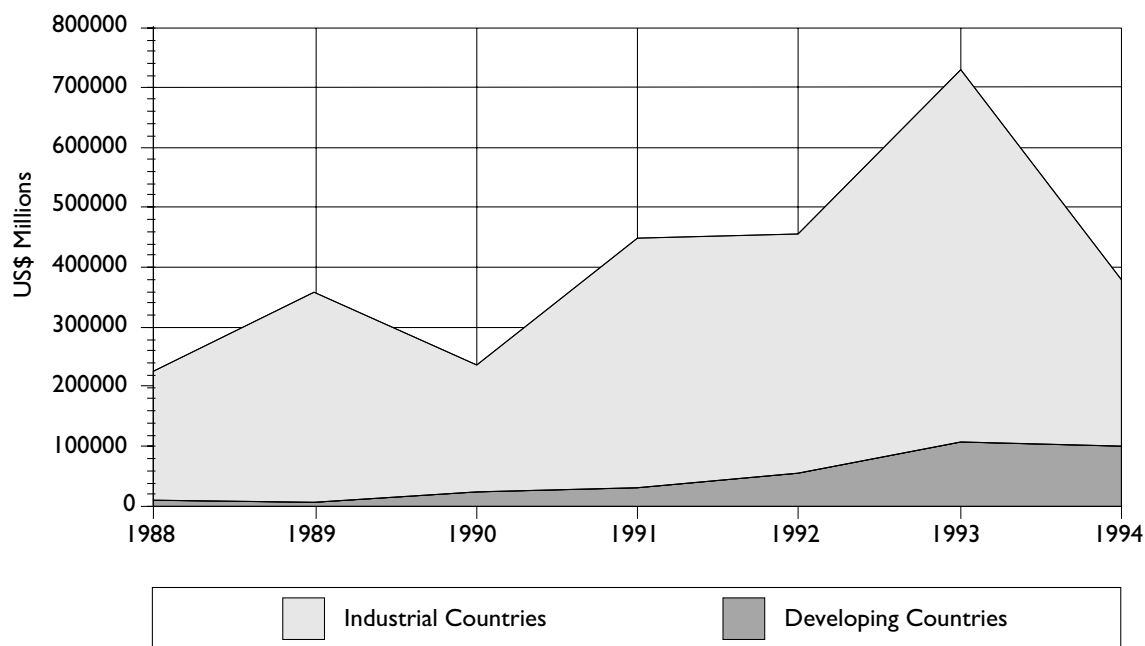
While the total amount of private capital going to the developing world has increased dramatically, it too has been concentrated in a relatively small number of countries. Over the past seven years, the top twelve recipient countries have been: China, Mexico, Brazil, Malaysia, Indonesia, Thailand, Argentina, India, Russia, Turkey, Chile and Hungary. Of these, two are considered "low-income" countries (China and India). The other 10 are

“middle-income.” While small in absolute number, these countries include massive populations, vast stores of biodiversity and huge demands for energy.

The geographic concentration of PIF flows in general and FDI in particular is even more stark when examined by region, as shown in Figure 5 (next page). From 1990 to 1996, 60 percent of global FDI went to Asia (UNCTAD 1995). Latin America received 27 percent of the total. Another six percent went to the emerging democracies of Eastern and Central Europe. A mere six percent of the global FDI total went to Africa.

Within regions, FDI flows also tend to be quite focused. China received four of every 10 FDI dollars invested in Asia over the period from 1989 to 1994. This concentration of resources in China has grown over time, as Figure 6 (next page) demonstrates. Today, more than half of all FDI inflows to Asia go to China. In Latin America, foreign investors have devoted resources to a broader array of countries. Mexico and Argentina have been the largest recipients of foreign capital over the past several years. Argentina’s FDI inflows have been sharply down in the most recent period, however (Figure 7). This reflects a slowdown in the pace of privatization and perhaps the

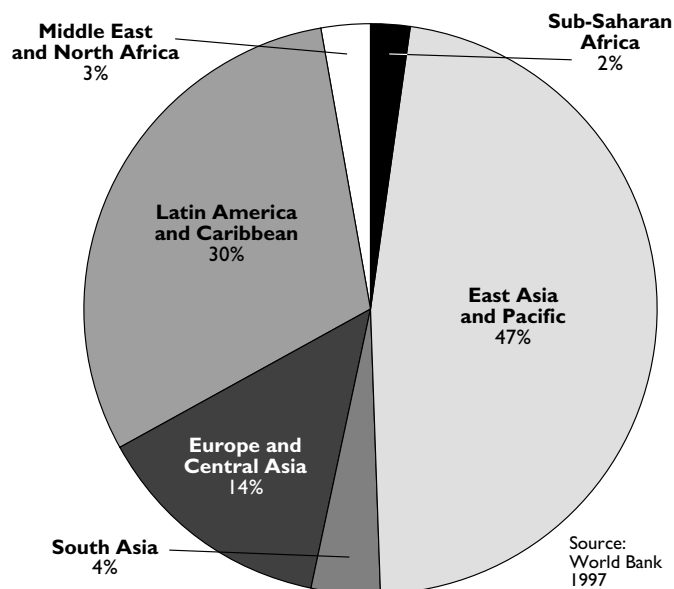
Figure 4 World Portfolio Equity Investments by Destination, 1988-1994



Source: Yale Center for Environmental Law and Policy, IMF Balance of Payments Statistics Yearbook 1995, UNCTAD World Investment Report 1995



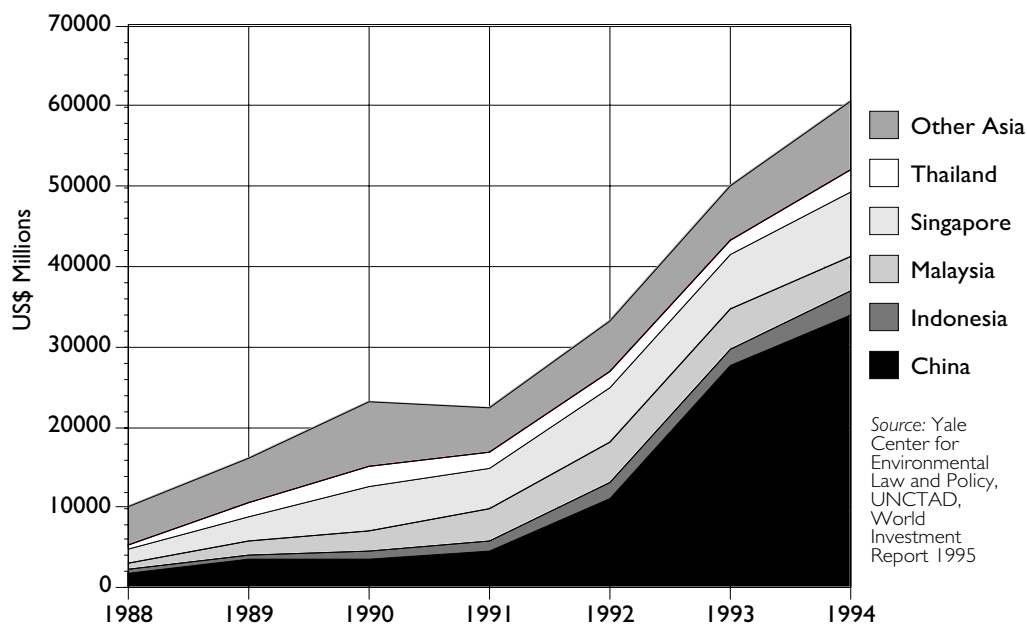
Figure 5 Cumulative Regional Flows of Private Capital, 1990-1996



“tequila” effect that caused investors, burned by the Mexican peso crisis, to shun similar economies. The data from Central and Eastern Europe tells a similar story. Hungary has received the largest flow of FDI in recent years, but Hungary’s share has slipped in the most recent years as FDI flows have gone to a broader set of countries.

Such changes reflect an expansion of the number of developing

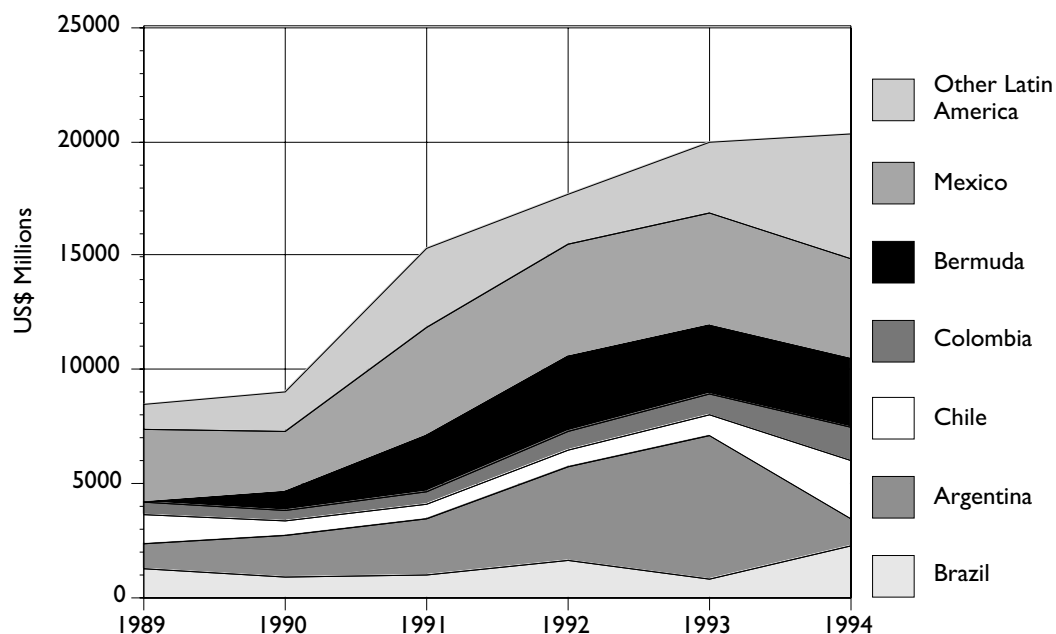
Figure 6 FDI Inflows to Asia by Country, 1989-1994



countries receiving international private investment. For example, the share of PIF going to the top 12 recipient countries mentioned above (expressed as a percentage of total PIF to the developing world), has declined from 87 percent in 1992 to 73 percent in 1996 (World Bank 1997). The Institute of International Finance reports that, over the past two years, the number of developing countries tapping the global capital markets increased from 25 to 56 (IIF 1997). Largely, this consists of expansion among middle-income countries, to which private capital flows nearly tripled between 1992 and 1996. While flows also nearly tripled to low income countries, they were much more concentrated in only two nation states — China and India.

While this expansion is good, the residual, geographic concentration of private capital flows raises serious questions about how certain areas—South Asia, Sub-Saharan Africa—should best position themselves to capture a greater proportion of PIF. In the near term at least, these regions lay the strongest claim to the foreign aid which is available, particularly where it can help improve their attractiveness to private investors.

Figure 7 FDI Inflows to Latin America by Country, 1988-1994



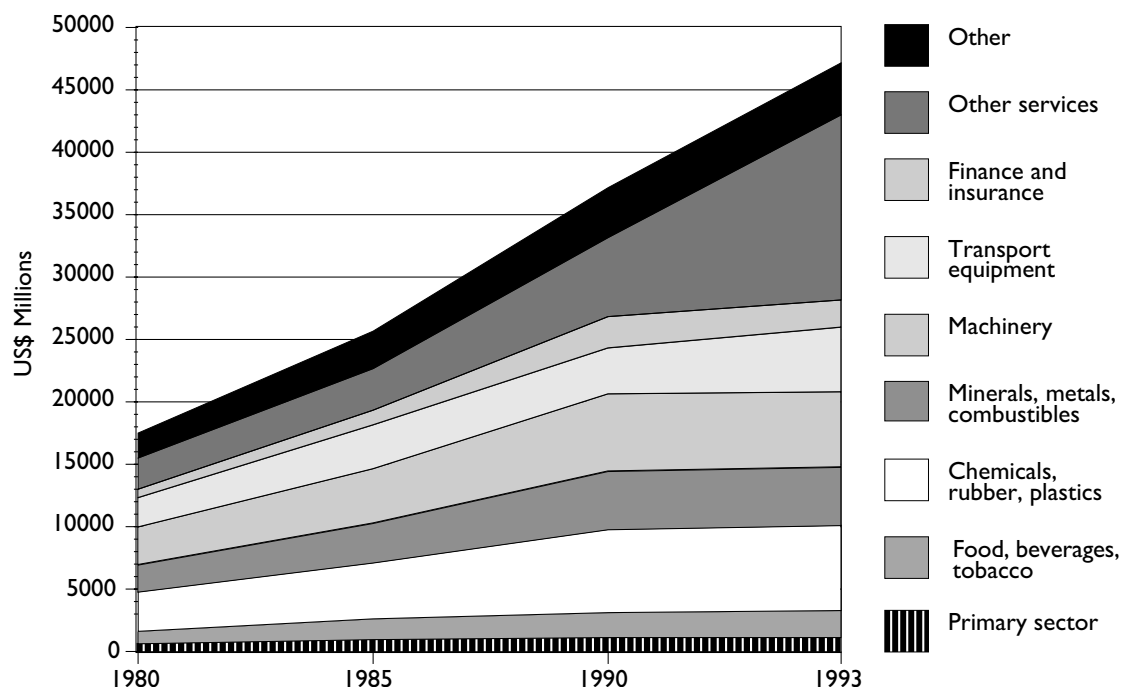
Source: Yale Center for Environmental Law and Policy, UNCTAD, World Investment Report 1995

## SECTORS: MANUFACTURING AND SERVICES LEAD THE WAY

Aggregate data on which economic sectors and industries are receiving FDI is hard to come by. Nevertheless, some country-by-country data are available. In Brazil, for instance, a diverse set of industries are receiving infusions of foreign capital (Figure 8, below). In Mexico, a large portion of the FDI has gone into automobile factories, although a range of other sectors have also received substantial financial flows. In China, the largest portion of FDI has gone into industry. But significant amounts of foreign investment have also been devoted to the real estate market.

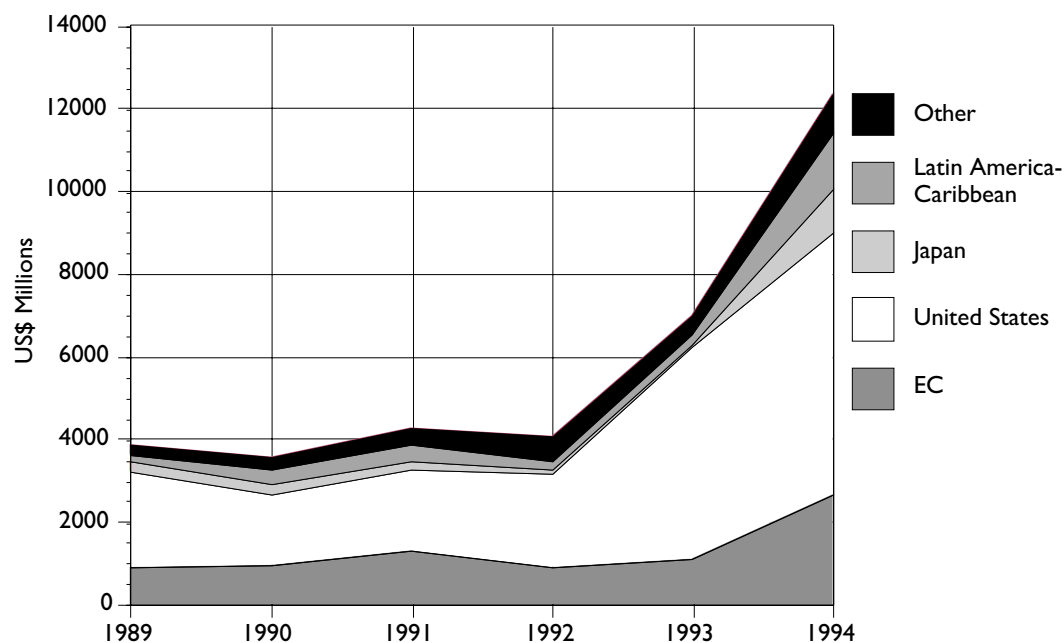
Interestingly, from an environmental point of view, the proportion of FDI going into traditional resource extraction activities is relatively small in many of the countries that are now receiving large amounts of international private capital as compared to investment in the manufacturing and services sectors.

Figure 8 FDI Stock Growth in Brazil by Sector, 1980-1993



Source: Yale Center for Environmental Law and Policy,  
Inter-American Development Bank, Institute for European-Latin American Relations

Figure 9 FDI Inflows to Mexico by Country, 1988-1994



Source: Yale Center for Environmental Law and Policy, OECD International Direct Investment Statistics Yearbook 1996

#### SOURCES: PRIMARILY DEVELOPED COUNTRIES, GROWING SHARE FROM EMERGING MARKETS

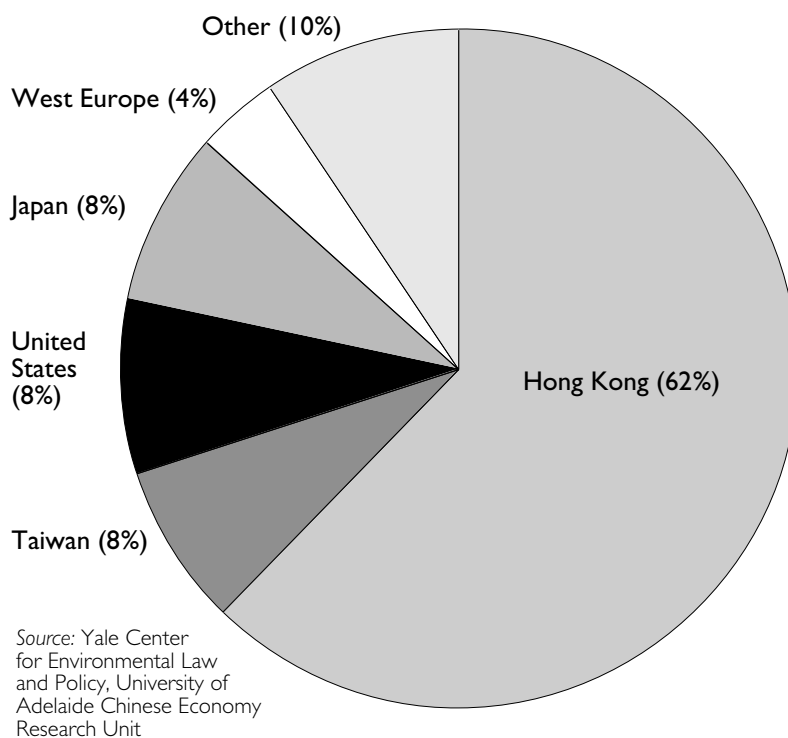
The key investors also vary from region to region and country to country. In Brazil, for example, the European Union has traditionally been the largest source of FDI. The European Union still has the largest stock of foreign capital in Brazil. In recent years, however, the United States has surpassed the European Union as the dominant investor in Brazil. In Mexico, by contrast, both Japan and the European Union have grown in the share of FDI they contribute to the country. Despite the increase in FDI inflows from Europe, Japan, and other countries, the United States remains the dominant source of foreign capital for Mexico (Figure 9).

By far the largest source of FDI inflows to China is through Hong Kong. The United States, Japan, and Taiwan also represent significant shares of the foreign capital going into China (Figure 10, next page). The fact that more than two-thirds of the money invested in China comes from Taiwan and Hong Kong suggests that much of the foreign capital in China comes from overseas Chinese. Some observers speculate that a not inconsiderable fraction of this flow actually represents recycled funds generated by enterprises within China itself (World Bank 1996).

The source of FDI can affect the environmental performance of the investment. For example, multinational operating companies headquartered in North America or Western Europe have become extremely sensitive to environmental risks as a result of enforcement and liability experiences in their home jurisdictions. Many take the attitude that similar problems may befall their investments in emerging markets unless they evaluate and plan for them as part of the investment process. Hence, extensive environmental investigations and negotiation of contractual protections are increasingly the norm for these companies' investments around the world.

At the other extreme, investors from countries which do not have a strong tradition of effective environmental protection programs tend to be less concerned about environmental risks beyond those already present in fact. So, if a recipient country has environmental requirements on the books, but never applies them in practice, foreign direct investors from these countries will take no special steps either. Such differences in the attitude of parent companies to environmental issues are playing themselves out in a number of areas such as the different approaches being taken by Asian and North American timbering companies to forestry operations in Brazil (Gentry et al. 1997).

Figure 10 Cumulative FDI Inflows to China by Country, 1984-1993



## ENVIRONMENTAL IMPACTS OF FOREIGN DIRECT INVESTMENT: NOT MONOLITHIC EITHER

Given that private capital flows show such diversity, it is not surprising that their environmental impacts vary widely as well—with both positive and negative effects. On the one hand, foreign investment generates economic growth and wealth. This prosperity makes bigger investments in environmental protection possible. But it also may lead to increased consumption of polluting goods such as automobiles. In addition, expanded industrial activity often leads to higher levels of emissions. In many circumstances, however, FDI-financed growth is accompanied by greater environmental commitments and better performance than domestically-financed economic expansion.

FDI flows, and private international finance more broadly, thus emerge as a dual-edged sword. On the one hand, the economic linkages implied by funding from the industrialized world for enterprises in the developing world create increased interdependence and the potential to link the economic fates of the North and the South. On the other hand, there will certainly be individual companies and sectors that will be “losers” from the economic restructuring that is likely to follow vastly expanded capital flows to the developing world. Those in the industrialized world whose economic position seems to have been worsened may well blame foreign direct investment and seek political intervention to protect the status quo. They may also cite lower environmental standards in developing countries as one of the reasons their enterprises became noncompetitive.

To the extent, moreover, that economic growth exacerbates pollution problems in the developing world in the short term, some environmental advocates will certainly blame private international finance. Of course, some of these pollution problems will be ameliorated as the developing world becomes more wealthy and can afford bigger investments in pollution prevention and control. In these circumstances, the challenge will be to see how quickly countries can be moved “over the hump” to the point where environmental harms are diminishing (Grossman and Krueger 1993).

This paper cannot do justice to the “mega-issue” of the long-term sustainability of economic development generally. It attempts, more narrowly, to review the environmental issues connected to FDI-driven economic growth.

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## TYPES OF FDI

The environmental character of industries that receive foreign investment and the environmental effect of private international finance more generally varies considerably depending on the type of investment and the goal of the investor (IDB/IRELA 1996). It is therefore useful to distinguish among three distinct types of FDI:

### Market-Seeking FDI

Many foreign investors are seeking opportunities to sell in overseas markets. They are likely to be attracted by the potential for sales in the domestic markets of the countries in which they are investing. In this regard, markets that are large in size and growing will be most attractive—such as those in Southeast Asia and parts of South America.

### Resource-Seeking FDI

Other investors' overseas activities are aimed at access to critical resources that are not available in their own markets. In other cases, although the materials might be available at home, investors see the prospect of lower prices in setting up a facility abroad. Indeed, the prospect of obtaining cheap raw materials is one of the classic reasons for foreign investment. The prospect of obtaining low-cost skilled labor for manufacturing has been a driving force behind U.S. investment in Mexico, E.U. investment in Eastern Europe, and Japanese investment in countries such as Thailand, Malaysia, and the Philippines.

### Production Platform-Seeking FDI

In still other cases, investors set up overseas facilities to serve specific export markets. Resources are devoted to setting up facilities that will provide a platform for production and sales in a regional market above and beyond the particular country sales that market-seeking PIF might have targeted. The emergence of Japanese auto factories in Britain and Mexico, providing platforms for sales in the European and North American markets are examples of this type of foreign investment.

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## COMPETITIVENESS AND ENVIRONMENTAL PROTECTION

One of the most important FDI dynamics is that of competition among jurisdictions for limited foreign funds. Competitiveness pressures arise within countries and between countries. In China, for example, the various provinces compete intensely for foreign

capital (Esty and Mendelsohn 1995). The effort to lure foreign investors often includes a tacit (or express) commitment to lax enforcement of environmental standards. Similarly, countries compete against each other to be attractive locales for foreign investors. In 1995, China saw a slowdown in its flow of foreign capital as investors perceived other Asian economies (Indonesia, Malaysia, the Philippines) as more hospitable hosts.

How competitiveness pressures play out in the realm of foreign investment also varies from industry to industry. In more “commodity”-like industries, where products are relatively undifferentiated and small cost differences can translate into large market share gains and losses (i.e., demand is relatively elastic), foreign investors can exert considerable pressure on recipient countries. In such industries, companies claim (quite correctly) that small differences in cost will dramatically affect their market position and profitability — and investment flows may be susceptible to influence based on the level of environmental standards. Thus, for example, a number of U.S.-based furniture makers have shifted operations out of California to Mexico, reportedly to take advantage of lower environmental costs (GAO 1990).

Where investors are competing to get into a market that is considered “hot,” (such as China), the local entrepreneurs who are seeking funds may bargain from a position of strength, playing off potential investors against each other. For example, in the competition to fund electricity generation projects in China, the demand for power plants is great but the eagerness of foreign investors to participate in China’s explosive economic growth is even greater. North American and European companies have therefore found themselves under pressure to eliminate environmental components from their proposed China power projects in order to cut costs and to win bids (Esty and Mendelsohn 1995).

Competitiveness pressures can also work in the opposite direction. In fact, in some markets, overseas investors push for higher environmental standards. Foreign investors in Costa Rican banana production have insisted upon environmental care, perceiving that their European customers want an environmentally-sound product (Gentry et al. 1997). A number of Asian lumber projects are similarly geared to the European market, where consumer sensitivity demands, in many cases, that the product meet at least minimum environmental conditions. Insistence on “sustainable forestry” and reasonable environmental performance in these circumstances may be driven by overseas buyers directly or market forces such as the Forest Stewardship Council’s timber labeling program that advises consumers about the environmental content of the products they are purchasing.

*Competitiveness pressures arise within and between countries. The effort to lure foreign investors often includes a tacit (or express) commitment to lax enforcement of environmental standards. But in some markets overseas investors push for higher environmental standards in response to consumer demand for an environmentally sound product. In other markets, competitiveness pressures translate into a desire to reduce waste and improve productivity, which often entails improved environmental performance.*



In other markets, competitiveness pressures translate into a desire to reduce waste and improve productivity, which often entails improved environmental performance (Schmidheiny 1992). Dupont, for example, has set a zero emissions goal for its worldwide operations, not as a result of regulatory pressures but rather to achieve maximal eco-efficiency.

#### POLLUTION HAVENS AND THE RACE TO THE BOTTOM

One of the most lively debates over the environmental consequences of foreign investment centers on concerns about “pollution havens” (Esty 1994; GATT 1992). Data on whether foreign investment goes to “dirty” or “clean” industries are sparse. As the charts presented in the first section of this paper suggest, foreign capital flows to a wide range of industries and companies in the developing world—some that are careful environmental stewards and others that are not.

Economists have traditionally found little empirical evidence that countries with low environmental standards attract dirty industries (Kalt 1988; Tobey 1990; Low & Yates 1992; Blazejczak 1993). Even in industries with high pollution control costs, companies often face significant deterrents to relocation including high fixed capital investments and the need to remain close to their markets (Grossman and Krueger 1993).

But there is some evidence that in industries with much higher than average pollution control costs, production may migrate overseas to areas with lower (and therefore cheaper) environmental requirements. Japan’s cement industry, for example, has all but vanished as Chinese producers have become the dominant suppliers to the Japanese market. Thus, it appears that one type of “resource-seeking” foreign investor will be attracted to the lower cost of operating in locales where environmental rules are lax.

#### TECHNOLOGY DIFFUSION

Another important dynamic unleashed by expanded FDI concerns technology diffusion. On the one hand, foreign investors often bring with them modern technologies that are environmental improvements over what is currently available in the country in which they are investing. Indeed, multinational enterprises frequently build state-of-the-art facilities with the latest (low-polluting) technologies. They also employ advanced environmental management systems and often conduct pollution prevention and control training programs. Thus, in many cases, FDI-based economic expansion offers the promise of significant environmental improvements.

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The recognition that multinational enterprises often bring environmental benefits with them stands in sharp contrast with the traditional view of corporate titans as polluters who, if given the chance, will sell outdated technology to developing countries. There are, in fact, a few isolated examples where it appears that companies have dismantled outdated facilities in an industrialized country and moved them to a developing country (Bogg 1997). Anecdotal evidence suggests, furthermore, that certain kinds of enterprises, such as the town and village enterprises (TVEs) of rural China, are particularly likely to seek used (high-polluting) equipment from the industrialized world. The TVEs accept outdated equipment because they are undercapitalized and it is cheap.

The most egregious examples of this type of environmentally-deleterious technology arrangement appear, however, not to involve investors from OECD countries but rather those from Hong Kong, Singapore, or Taiwan (Esty and Mendelsohn 1995). In fact, most cases of "technology dumping" do not implicate FDI but rather involve simple sales of outdated equipment from overseas to companies in developing countries.

#### MULTINATIONAL ENTERPRISES AND ENVIRONMENTAL STANDARDS

The environmental impacts of FDI-funded facilities vary considerably. The environmental laws, regulations, and enforcement programs of the host country are often an important determinant of performance. In countries where standards or enforcement practices are relatively lax, domestic and some foreign investors may follow suit.

In many cases, however, multinational enterprises will still maintain quite high standards, consistent with the requirements imposed in their country of origin (Schmidheiny 1992). Multinational enterprises may find it advantageous to adhere to their home-based standards for several reasons. First, many companies find the efficiency of having a single set of management practices, pollution control technologies, and training programs geared to a common set of standards outweighs any cost advantage that might be obtained by scaling back on environmental investments at overseas facilities. Second, multinational enterprises often operate at a large scale and recognize that their visibility makes them an especially attractive target for local enforcement officials. Recognition of their high profile position leads many of these companies to be especially careful how they conduct their operations, including their environmental performance. Third, the prospect of liability for failing to meet appropriate standards often motivates better environment

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performance than might be required by local circumstances. The memory of the Bhopal disaster and the ensuing legal tangle that Union Carbide suffered makes adherence to home-country environmental requirements the policy of many multinational enterprises (Schmidheiny and Gentry 1997).

Even greater problems may derive from the secondary effects of FDI-funded facilities. For instance, some of the most serious environmental harms arising in the Maquiladora zone along the U.S.-Mexico border proved not to be a function of the multinational enterprises operating there, but rather the rapid development of the area without adequate environmental infrastructure (EPA/SEDUE 1992 at III-41-44). In many parts of the world, similar patterns of new urban settlements with limited drinking water and waste disposal infrastructure arising near factories supported by PIF can be found. Are the ensuing environmental problems a function of foreign investment or inadequate national policies? An argument can be made either way.

In addition, while many multinational enterprises adhere to reasonably sound environmental programs, their local suppliers and service providers are less likely to do so. Few multinational companies track down what their waste haulers do with their refuse once it leaves their facility—although a growing number are starting to ask the question.

Finally, and as discussed above, where multinational investors have not experienced strict environmental programs in their home countries — or do not face substantial pressure from their export customers — they are less likely to have extensive, internal environmental programs in place.

*Initial research has found that where FDI improves environmental performance it does so because the company involved has concluded that it also means better business. The nature of these commercial benefits varies from sector to sector and from company to company.*

#### FACTORS SHAPING THE ENVIRONMENTAL PERFORMANCE OF FDI

What factors determine the environmental content of FDI flows? Initial research into this question has found that where FDI improves environmental performance it does so because the company involved has concluded that it also means better business (Gentry et al. 1997). The nature of these commercial benefits differs from sector to sector and company to company. Steps taken to obtain one type of benefit usually influence or are influenced by other types of benefits as well.

Five major categories of commercial benefits which motivated corporate environmental improvements were identified in the Gentry et al. (1997) Latin American study:

#### **Improved access to export markets**

Improving trading prospects by better environmental performance was a theme that ran through many of the cases, particularly in the agriculture and manufacturing sectors. Some of the commercial benefits were driven by perceived consumer demands for environmentally responsible products. Other efforts were motivated by a desire not to be out of step as competitors improved their environmental performance. Finally, all of the commercial benefits were affected by the freer trade and the scrutiny this brought. The increased enforcement of environmental requirements in Mexico since the early 1990's has its roots in the debate over the environmental impacts of the North American Free Trade Agreement (NAFTA) and European Union legislation on eco-labels has focused the attention of exporters on the environmental characteristics of their products.

*Some of the commercial benefits were driven by perceived consumer demands for environmentally responsible products. Other benefits were derived from the reduction of high cost polluting wastes. There was also a variety of pressures to be "good environmental actors."*

#### **Increased productivity**

Pollution means waste. Waste often means higher costs. As the strategic implications of these simple statements are explored by companies operating in the industrialized world, their lessons are also brought to bear on their subsidiaries in emerging markets. Under the banner of "eco-efficiency," foreign investors are looking to apply their new capital and management techniques to achieving a profitable balance between increased production efficiencies and pollution control costs. Of the cases studied, these effects were most noticeable in the privatization examples (Gentry 1996b). Given the inefficiencies in the government's prior operations, many opportunities existed for improving the efficiency of raw material use while reducing environmental impacts.

#### **Maintenance of a "social license"**

##### **To operate and expand globally**

The multinational companies involved in many of the Latin American cases studied face a variety of pressures to be "good environmental actors." These include: the desire to win government concessions in other countries; home country pressures not to

“export” pollution; and concerns over differential enforcement against international investors.

#### Access to finance

Investors in large facilities are increasingly aware of the need to consider environmental issues as part of their transaction review process (Gentry 1996a). This is particularly true for multinational operating companies. Experience in their home countries with major hidden costs (such as for the clean-up of contaminated sites), combined with the “social license” issues described above, mean that they conduct extensive, internal due diligence when undertaking an investment. Since much of the FDI is funded internally (from retained earnings), the companies themselves are often the primary financing parties that must be satisfied. Where larger investments are being made or political risks are high, government financing bodies may also be involved at the multilateral (World Bank), source country (U.S. Export-Import Bank) or recipient country (BNDES in Brazil) levels.

To meet their own political imperatives, an increasing number of these institutions are requiring that specified environmental standards be met — such as the “Green Protocol” applied by BNDES (Gentry et al. 1997; World Bank 1996a; ADB 1993; ExIm Bank 1995). Even when the companies seek commercial loans or new equity from external private sources, a minimum level of environmental due diligence is usually required. This may be as limited as ensuring that the facility is in compliance with the environmental laws of the country in which it is to operate. Given the relative absence of enforcement in many emerging markets, just having to answer the question is a powerful incentive to at least look at compliance. More extensive requirements may also apply, such as the disclosure of environmental liabilities required for the listing of new shares on the US stock exchange.

#### Opportunities for

##### “Environmental investments”

Finally, some of the environmental improvements seen were a result of government-sponsored investments in environmental infrastructure. For example, privatization of the water and sewerage services in Buenos Aires led to rapid expansion of the water system, as well as substantial improvements in the quality of water supplied and the level of treatment of wastewater — all for rates lower than those previously charged by the government (Gentry et al. 1997).

*Increasingly, companies themselves, as well as government financing bodies, are requiring that specified environmental standards be met. Even when companies seek commercial loans or new equity from external private sources, a minimum level of environmental due diligence is usually required.*

Other countries are also expanding the level of private investment in water systems (Mody & Haarmeyer 1997), as well as other environmental infrastructure (such as waste treatment facilities).

#### **BUILDING A BASE FOR POLICY: INTEGRATING INVESTMENT PROMOTION AND ENVIRONMENTAL IMPROVEMENT**

The developing world needs both further private investment and further improvements in environmental performance. Both can be optimized by integrating environmental goals into investment attraction programs. This will require both environmental and development advocates to understand better the others' motives, thus helping to identify areas of overlapping goals.

#### **CHANGING INVESTOR DECISION MAKING: BUILDING ON COMMERCIAL INCENTIVES**

Environmental advocates often ask, "Can we trust investors to do the right thing," meaning acting altruistically to promote environmental protection. Not only is the answer no, but the wrong question is being asked. As described above, foreign direct investment is leading to significant improvements in environmental protection, not because it is the "right thing" to do, but because it is to the investors' commercial advantage to do so.

The more useful question is, "Can we generally predict how private investors will act to further their commercial self-interest in ways which impact the environment?" While the details will vary among investors, the answer to this question is yes—lighting the way to steps policymakers can take to increase the environmental benefits associated with private capital flows still further (see below).

#### **WILL INCREASED ATTENTION TO ENVIRONMENTAL FACTORS DRIVE INVESTORS AWAY?**

Alternatively, development advocates will often ask, "If we pay more attention to environmental factors, won't we drive investors away?" In fact, many development ministers base their opposition to increased attention to environmental issues on this belief.

Increasingly, the answer to this question is no. First, as the impacts of pollution on human health and productivity—particularly in the megacities of the developing world—become clearer, so too does the need to address economic and environmental issues together. Second, the studies described above suggest that greater attention to environmental factors will not drive investors away for a number of different reasons: (a) the choice of a location for invest-

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ment is usually driven by factors other than environment, such as labor and market access considerations; (b) investors are more interested in having a clear and uniformly applied environmental regulatory framework so that they can predict their costs and returns, than they are in any particular level of environmental protection being required; and (c) poor, local environmental conditions can be a negative for foreign investors when deciding where to base some of their operations, such as regional headquarters.

The more important question then becomes, “How can we best optimize the achievement of our economic and environmental goals?” The answer is to increase the commercial advantages available to investors through improved environmental performance—building on the lessons from the work to date, as well as the changed roles for governments and other actors in the pursuit of environmental protection.

#### FITTING ENVIRONMENT INTO THE CHANGED ROLES FOR GOVERNMENT: ENABLERS AND OVERSEERS OF MARKET ACTIVITY

The shrinking of the state and the expansion of the private sector has changed the role of government in many developing countries. Instead of being the direct providers of goods and services, governments are now the enablers and overseers of private market activity.

This changed role has two major parts: establishing market frameworks and addressing market failures. Market frameworks include the basic property rights and economic conditions necessary to private investors and others to function. Market failures range from monopoly pricing to environmental externalities—“free” use of the public air and water for dumping or other harmful activities without internalizing the cost to society.

In order to optimize the achievement of economic and environmental goals, they must advance hand in hand. Governments need to build mechanisms for internalizing environmental costs into market frameworks, so that they encourage innovation and more efficient resource use, rather than just imposing costs on industries. Targets for such action can be taken from the cases described above: increasing access to export markets; improving productivity; maintaining a social license to operate; obtaining finance; and capturing environmental investment opportunities.

#### AN ACTION AGENDA: WORKING TOGETHER

Effectively building on these targets will require action by many different parties, including the following:

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## CUSTOMERS: BUILDING DEMAND

With the dominance of the export-led model of economic growth for developing countries, the attitudes of export customers are critical. While “green consumerism” is still confined to a relatively few areas of the world (such as northern and western Europe and parts of North America), even this relatively small demand is having substantial effects on environmental awareness. For example, the International Standard Organization’s (ISO) environmental management standard (ISO 14000) is being rapidly adopted by Japanese electronics and other Asian companies for fear of losing access to lucrative export markets.

For consumers to be an even more powerful force for environmental improvements, they need both information and price signals. The information needs are both general (why it is important to look for “environmentally responsible” products) and specific (why is one product more “environmentally responsible” than another). They can be met through action by NGOs, businesses, and governments. The price signals needed are those closing the gap between traditionally higher priced “green products” and their more damaging substitutes—an area for government action to promote internalization of environmental costs, as well as for businesses and NGOs to develop such products for sale.

## FINANCIERS: SEEKING INFORMATION AND REFLECTING IT IN INVESTMENTS

Somewhat like consumers, there is great potential for the private financial community (banks, institutional investors) to pursue its self-interest in a manner which improves environmental performance. One step is to ask clients for information on material environmental issues. Just asking about compliance and liability risks, or opportunities for increased revenues stemming from environmental considerations will go a long way to promoting improved environmental performance.

Acting on material environmental factors is another. Clearly, environmental issues can have a major impact—positive or negative—on a company’s bottom line. Liabilities for accidents or spills can be huge. New products can be driven by environmental markets. Improved resource productivity and decreased emissions can be an indicator of quality management.

Were more private financiers to investigate and act on financially significant environmental factors, substantial additional pressure would be brought to bear on improving environmental performance. Ultimately, it is for the companies who view their environ-

*Action by many different parties is required to effectively build toward these targets. The attitudes of consumers are critical; they need both information and price signals. Similarly, the private financial community can pursue its self-interest in a manner which improves environmental performance. Clearly, environmental issues can have a major impact—positive or negative—on a company’s bottom line.*



mental programs as a competitive advantage to make this showing to the private financial community (Gentry and Fernandez 1997).

#### NGOs: UNDERSTANDING, PRESSURING, AND SOLVING

While many NGOs understand how governments work and how businesses can be bad for the environment, fewer have yet to understand—or believe—why it can be to a company’s commercial advantage to improve environmental performance. As a result, many NGOs are stuck behind the “trust barrier” described above, rather than able to predict and influence how companies will act to further their commercial advantage.

Understanding business decision-making enables NGOs to act in one of two major ways. First, they can use that knowledge to increase the pressure for improved environmental performance still further through indirect (aimed at governments, consumers, financial sources) and direct (through shareholders rights and public protests) action. Second, they can identify the areas in which they share common goals with foreign direct investors—such as the provision of local environmental training or infrastructure—and on which they can work together.

In thinking about the role of environmental NGOs, it is important to remember that they are not monolithic either. Many organizations—particularly in industrialized countries—that have played critical roles pressuring governments and businesses to clean up their act on the environment, have also become sophisticated advocates of new corporate management techniques. Such NGOs are already partners with business in improving environmental performance. However, not all NGOs have or should choose this collaborative role. These NGOs will continue to be most effective by pressuring for change from outside. In addition, it needs to be recognized that environmental NGOs in developing countries will continue to play different roles than their industrialized country counterparts because of the differing political and cultural contexts in which they operate.

*NGOs that understand business decision making can act in one of two ways: increase pressure for improved environmental performance and identify areas in which they can work collaboratively with foreign investors. Investors themselves can continue to invest in the emerging markets of the developing world, innovate in the design of products and operations, and cooperate with efforts to implement environmental frameworks.*

#### MULTINATIONAL OPERATING COMPANIES: INVESTING, INNOVATING, AND COOPERATING

The most useful action international foreign direct investors can take is to continue to invest in the emerging markets of the developing world. Doing so can not only contribute to local economic growth, but can also improve environmental performance in the ways described above.

Beyond further investment, foreign direct investors should take two further steps to link financial and environmental performance. First, they should continue to innovate in the design and use of more efficient and environmentally responsible products and operations. Whether as “cleaner technologies” or “sustainable products,” multinational companies are among those best positioned to lead the way in these developments. Second, they should cooperate with governmental, business, NGO, and other organizations to put in place the environmental frameworks necessary to support existing environmental management systems. Whether these efforts take the form of pressure on governments to adopt and implement clear and consistent environmental requirements, or joint initiatives on environmental infrastructure and training, the result will be increased environmental awareness and pressure for continued improvements.

#### GOVERNMENTS: BUILDING MARKETS, FACILITATING INFORMATION, SUPPORTING DEALS

The greatest challenges, however, lie within recipient country governments—overcoming the traditional view that economic growth and improved environmental performance are incompatible. Even though evidence is mounting that they can—and must—go hand in hand, the traditional hesitation to go beyond having nice looking requirements on the books, but never applying them in practice continues to be the norm. Only with greater recognition by recipient country Ministries of Finance, Development, or Economy that integration of economic and environmental goals optimizes social welfare will the major roadblock to substantial further progress be overcome.

Once that challenge is met, governments have a variety of options for building on existing commercial pressures to increase still further the environmental benefits of private capital flows. They involve building markets, providing information and supporting deals.

First, governments by making environmental factors financially significant build markets for further improvements in environmental performance. Such steps should be taken in both recipient and source countries. While the emphasis must be on selecting locally effective tools from the wide range of policy options available, examples building on the commercial advantages described above include:

- *Expanding access to export markets:* promote “green” exports from developing countries and their purchase in industrial

*The greatest challenges lie with recipient countries’ governments. By making environmental factors financially significant, governments build markets for further environmental improvements. They can also help facilitate the flow of information linking environmental and financial performance. Governments should also seek to optimize these goals by building environmental considerations into the deals they sponsor or support.*

ized countries; negotiate, in a transparent and inclusive manner, harmonized environmental (product or process) standards as part of regional trade agreements;

- *Improving competitiveness:* reduce subsidies or impose fees for energy and water use in order to reflect true costs;
- *Maintaining a social license to operate globally:* enforce existing environmental requirements; adopt performance based standards for emissions, leaving flexibility in how they are met; work with companies to provide local environmental training and infrastructure (such as through the UNDP program on public private partnerships);
- *Obtaining finance:* condition national and bilateral development assistance on meeting standards for environmental reviews and performance;
- *Capturing environmental investment opportunities:* promote investments in environmental infrastructure (such as water or waste treatment facilities) and expand incentives for industrialized country investors to make them (such as through joint implementation type programs).

Second, while private investors ultimately will rely on the information they generate, governments can help facilitate the flow of information linking environmental and financial performance. This is particularly true for overcoming the gaps in financial and environmental information that face many international investors. Governments should set clear frameworks for disclosure of financial information in local stock markets and bank regulatory systems, including material environmental factors. They can support the development of measurement and reporting systems demonstrating the relationship between financial and environmental performance. Finally, they are well placed to help provide basic information on the environmental requirements and opportunities facing private investors.

Third, governments should seek to optimize economic and environmental goals by building environmental considerations into the deals they sponsor or support. For example, extensive environmental reviews and negotiations were built into the privatization of the Mexican steel industry—in order to achieve a higher sale price (Gentry et al. 1997). Involving private parties in the design of infra-

structure services—and not just in building to the specifications of government planners—will increase efficiency gains. Broader sectoral investment promotion programs such as those for agriculture or manufacturing should include environmental infrastructure or reflect the results of environmental reviews in order to anticipate and address environmental issues up front—rather than making expensive adjustments further down the road.

## CONCLUSIONS

Private investment is and is likely to remain the major source of “new and additional” resources for developing countries. Because it is to their commercial advantage, an increasing number of international private investors have begun to build environmental improvements into their international operations.

More can be done—particularly if recipient country governments understand and build upon these existing commercial advantages. Integrating environmental factors into investment support programs does not drive investors away—except in isolated cases. Rather, an integrated approach offers great potential for optimizing the achievement of a country’s economic and environmental goals.

The action agenda described above is aimed at building on these existing incentives in an incremental fashion. Whether it will be sufficient to achieve a sustainable future remains to be seen—for example, more fundamental changes in production patterns may be necessary for “sustainable agriculture.” Even if more fundamental shifts are necessary, they will themselves be most “sustainable” if they are brought about through incentives that reinforce the factors already motivating private investors.

Improving economic and environmental performance—achieving a sustainable world—will require consideration of social issues as well. Integrating the goals of the environmental and human development communities continues to be a difficult—but critical—task. The ultimate objective is to do so while increasing the levels of private investment in the developing world still further.

The explosion of private capital flows to the developing world presents a tremendous opportunity to make real progress toward sustainable development. Governments need to understand the implications and potential of the shift away from foreign aid. They then need to act by building on the commercial incentives already present. Their clear target should be to harness the power of private investment to the achievement of a sustainable future.

*The explosion of private capital flows to the developing world presents a tremendous opportunity to make real progress toward sustainable development.*

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#### BRADFORD S. GENTRY

Bradford S. Gentry is co-director of the Yale/UNDP Program on Public-Private Partnerships as well as director of the Research Program on Private Finance and the Environment at the Yale Center for Environmental Law and Policy. Trained as a lawyer and a scientist, Mr. Gentry works with private companies and governmental authorities around the world on environmental aspects of private investments. He was the driving force behind the training "matchmaker" service now being applied by UNDP, the WBCSD and others in emerging markets. Mr. Gentry has written extensively on the links between private investment and environmental performance, including as editor and co-author of the forthcoming *Changing Roles: Private Capital Flows and the Environment in Latin America*.

#### DANIEL C. ESTY

Daniel C. Esty is associate professor of environmental law and policy at the Yale School of Forestry and Environmental Studies and the Yale Law School. He is also director of the Yale Center for Environmental Law and Policy. In 1993-94, Mr. Esty was a senior Fellow at the Institute for International Economics, a Washington, DC think tank, researching and writing on issues of environmental policy and trade, competitiveness, and development. From 1989-93 Mr. Esty served in a variety of positions at the US EPA, including Special Assistant to Administrator William Reilly, Deputy Chief of Staff of the Agency, and Deputy Assistant Administrator for Policy, Planning and Evaluation. He co-edited *Thinking Ecologically: Building the Next Generation of Environmental Policy* (Yale University Press 1997) and authored *Greening the GATT* (Institute for International Economics 1994).

## The Role of the Private Sector in Sustainable Infrastructure Development

Theodore Panayotou  
International Environment Program  
Harvard Institute for International Development

### ABSTRACT

The purpose of this paper is twofold. First, to review and assess the role already played by the private sector in sustainable infrastructure development and to explore its potential in the future. Second, to outline steps needed to be taken to facilitate the further development of private sector participation and the role of the international community in helping to optimize the sector's potential contribution. After a brief review of the problems with publicly operated infrastructure, the recent trends and prospects in private capital flows and in private sector participation in infrastructure development are described. Next the various options and contractual agreements for private sector participation and strategies for mobilizing private sector resources are outlined. The paper ends with a conclusion on lessons learned from past experience and the role that the international community can play to enhance and optimize the role of private sector development, especially in poor countries.

A major and integral part of sustainable development is efficient provision of environmentally sound infrastructure, such as water supply and sanitation, power, transport, and telecommunications. Traditionally, infrastructure has been the exclusive province of the public sector because of its natural monopoly features that preclude market competition, and its social and environmental externalities and other public good aspects, that result in social benefits exceeding private benefits. With a few exceptions, the public sector has been a costly and inefficient provider of infrastructure while its social and environmental dimensions received little attention.

The unsatisfactory situation is exemplified by the fact that most public utilities are insolvent and heavily subsidized by the state, yet the quality of service remains poor and the coverage partial. For example, one billion people are without access to safe water, two billion people are without access to adequate sanitation, and four billion people discard their waste without treatment. Twenty percent of the urban population and 60% of the rural population in developing countries are without power. Urban transport infrastructure in developing country mega-cities, such as Bangkok, Cairo, and Mexico City, is so deficient that traffic jams-related economic losses of several hundred million US dollars a year are not uncommon, not counting congestion-related pollution damages.

With population growth, urbanization and income growth, the demands on infrastructure are growing at an average rate of seven percent per year, and the gap between demand and supply is ever widening. It is estimated that environment-related funding needs for

*Traditionally, infrastructure has been the exclusive province of the public sector because of its natural monopoly features and its public good aspects. With few exceptions, the public sector has been a costly and inefficient provider of infrastructure while its social and environmental dimensions have received little attention.*

the world will rise from \$100 billion today to \$640 billion by the year 2025. Water supply, sanitation, power, and transport infrastructure alone would need funding in excess of \$100 billion by the year 2000 and \$250 billion by the year 2010 (see Table 1). Financial resources of this order of magnitude are far beyond the capacity of cash-strapped public utilities to provide or of the state sector emerging from chronic fiscal crisis to finance. Official development assistance (ODA), emphasized by Agenda 21 as the main source of funding of sustainable development in poor countries, not only fell short of Agenda 21's target of 0.7% of the donors' GNP, having declined to 0.27% by 1995, but it also fell in absolute terms to under \$55 billion in 1995. In constant terms the fall was even greater.

In contrast to the stagnation of official aid, private capital flows to developing countries grew from \$44 billion in 1990 to \$234 billion in 1996, foreign direct investment reached \$90 billion and accounts today for 15% of fixed investment in developing countries (World Bank Debtor Reporting System). A good part of this investment was directed to the financing and development of infrastructure, which saw a major growth in private sector participation over the past decade. The annual global market for projects involving private sector infrastructure is estimated at \$60 billion and 2000 new investment projects are under preparation, totaling US\$ 1.4 billion (Karasapan 1996).

During the 1990s, many developing countries began to liberalize their markets for infrastructure services. Countries from Argentina and Chile to Malaysia and the Philippines and from Hungary and Latvia to Gabon and Cote d'Ivoire have introduced competition and private participation in infrastructure, where in the past government monopolies dominated. The results have been very encouraging. Privately financed power plants in the Philippines eliminated ten-hour-long daily blackouts that cost the country an annual loss of \$1 billion in economic output. In Buenos Aires, a private concessionaire improved water and sanitation services and increased coverage by about 10%, while slashing tariffs by 27% (see Appendix).

In Cote d'Ivoire the government signed a purchase agreement to buy power from the first private power project in Sub-Saharan Africa. Within six months the 100 MW plant exceeded its availability target. In Guatemala, in an effort to reduce country risks, a private power plant was located on a barge which could be towed away in the event of nonpayment, thereby catalyzing the liberalization of power generation throughout Central America. The private sector's participation in the development and management of infrastructure and the provision of public services is likely to continue its upward trend under the impetus of economic liberalization, privatization,

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	1991	1995	2000	2005	2010	2015	2020	2025	growth/yr
Water supply	15,578	18,142	23,399	27,023	31,045	34,850	38,515	41,997	3
Sanitation	7,887	8,758	10,979	12,486	14,170	15,759	17,292	18,748	2.6
Population	11,099	11,978	13,181	14,214	15,255	16,241	17,188	18,090	1.4
Education		5,897	6,518	7,848	8,899	9,896	10,855	11,765	3.4
Agriculture		4,557	6,652	7,853	9,316	11,097	13,265	15,903	8.6
Transportation		4,916	23,119	35,109	38,822	42,204	45,883	49,960	15
Industrial waste		4,101	23,701	54,489	69,788	85,112	103,524	125,926	19.5
Biodiversity	176	176	176	176	176	176	176	176	0
Forestry	9,704	9,704	9,704	9,704	9,704	9,704	9,704	9,704	0
Electric power		17,513	50,805	107,423	165,755	216,374	270,016	329,198	12.9
Acid rain	1,067	1,342	1,793	2,326	2,989	3,794	4,777	5,973	5.2
Global climate	14,067	14,067	14,067	14,067	14,067	14,067	14,067	14,067	0
Total	59,578	101,151	184,094	292,718	379,987	459,273	545,263	641,508	7.2

Source:

and technological and financial innovation. It is indeed the only way to meet the growing infrastructure needs of the developing world.

### PROBLEMS WITH PUBLICLY OPERATED INFRASTRUCTURE

A major rationale and catalyst for increased private sector participation in infrastructure and public sector provision has been provided by the poor performance and mismanagement characterizing most publicly-owned and operated utilities. Well-managed public systems are the exceptions rather than the rule. A combination of technical, financial, institutional, and environmental problems of public service monopolies have resulted in unreliable service, unsatisfied consumers, poor cost recovery, and financially insolvent systems, unnecessary environmental damage, and unacceptable health hazards. The following problems have been identified based on an assessment of public water supply and sanitation systems (Idelovitch and Ringskog 1995), but apply at varying levels to other public services, such as power, telephone, and transport:

- Low-quality service and inadequate coverage (50-75% for water, 30-50% for sanitation); inability to cope with expanding population; the intermittent, low pressure water supply is mirrored in the power sector by frequent brown-outs and a variable electric current.
- Inefficient operational practices and poor maintenance resulting in large water losses, unaccounted-for water, and power losses as high as 40-50%, compared to 10-20% for well-managed systems.
- Excessive and wasteful use: For example, water consumption may reach 500-600 liters per capita which is twice the norm in metered and well-managed water supply systems; this is largely the result of water pricing, non-marginal cost pricing, and lack of metering. In the energy sector, underpricing leads to energy intensities (energy use per unit of GDP) that are two to three times the norm for full-cost priced energy.
- Poor cost recovery and financial problems arising from underpricing, limited consumption metering, irregular meter reading and billing not based on actual consumption. Water and electricity tariffs typically do not reflect the

*A major rationale and catalyst for increased private sector participation in infrastructure and public service provision is the poor performance and mismanagement characterizing most publicly-owned and operated utilities.*

incremental costs of future supplies, which results in inadequate funds for expansion. Poor maintenance resulting from poor cost recovery results in a vicious circle of falling revenues and deteriorating service.

- High labor costs and low labor productivity because of excess staff, generous benefits, and low skills. For example, public water companies often employ 5-10 employees per 1,000 water connections compared with only two to three employees per 1,000 connections for efficient water companies.
- Poor management and inability to attract management talent and qualified technical staff due to non-competitive wages, political appointments, high turnover, lack of a disciplined labor force, and lack of incentives to attract qualified managerial and technical staff.
- Large and growing state subsidies that benefit mainly the middle class and the wealthy who are large consumers of water and power, while the poor are either not connected or too small users to benefit much from untargeted subsidies.
- Lack of clear regulatory responsibility and conflict of interest between the regulator and operator functions of the public utility. Underperformance or undercompliance is often dealt with by lowering standards rather than by improving operations.
- Public service monopolies are usually among the largest sources of environmental problems, for reasons that range from soft budget constraints and inefficiency to low tariffs and bureaucratic shielding. Water and electricity tariffs rarely include environmental costs. For example, water rates do not cover the cost of collecting and treating waste water. Moreover, the general lag of sewage connections behind water supply connections results in sewage being deposited in septic tanks that contaminate shallow aquifers, which are often a major source of urban water supply.

*A combination of technical, financial, institutional, and environmental problems with public service monopolies have resulted in unreliable service, unsatisfied customers, poor cost recovery, financially insolvent systems, unnecessary environmental damage, and unacceptable health hazards.*

The poor performance and mismanagement characterizing most publicly-owned and operated utilities gave the impetus for considering private sector participation. A second and equally important catalyst has been the increasing needs of urban infrastructure

(power, water supply and sanitation, roads, ports, telecommunications, etc.) and the inability of the public sector to mobilize these resources. A declining ODA, unsustainable levels of budget deficits and external debts, and the need to maintain fiscal discipline to control inflation and spur economic growth have convinced governments to seek private sector resources.

## THE PROMISE AND CHALLENGE OF PRIVATE SECTOR PARTICIPATION

The promise of the private sector lies in (a) improved management and higher efficiency and (b) increased access to private capital for maintenance and expansion. The two are related since greater efficiency results in cost savings and greater availability of funds for investment; improved management results in easier access to private capital; and investment of private capital constitutes an added incentive for operational efficiency.

While the potential benefits from private sector participation are clear, the obstacles are often formidable. Infrastructure investments tend to be capital intensive and lumpy, and have long gestation and even longer payback periods. For example, in water and sanitation, the ratio of investment in fixed assets to annual tariff revenues is 10 to 1. This means that private financing is contingent upon the existence of long-term capital market and guarantees and rewards offered for high perceived risks. The private sector risks are many and varied: demand for the services provided may turn out to be lower than expected; tariffs may be too low and not permitted to adjust to reflect costs; the condition of infrastructure may turn out to be worse, delays of construction longer, and costs higher than anticipated. Other risks include the financial risk of currency devaluation, legal risks in dispute resolution, and the political risk of asset appropriation. As a result of one or more of these risks, the private contractor may be unable to recover costs and earn a reasonable profit. Indeed, how these risks are quantified and mitigated turns out to be the key to private sector participation in infrastructure projects. The principle is that whoever controls a particular risk best should assume it and be compensated for it.

The public sector that invites private sector participation in areas that have been traditionally reserved for the state also faces risks: procured services may be substandard or costs may turn out to be higher than those charged by the public utility. There are also political risks, arising from public opposition, especially by labor unions. Water supply, sanitation, and power (as well as other utilities) are natural monopolies; it is uneconomic to duplicate the water and sewage pipes or the power lines in city streets, and, therefore, competition is difficult to achieve. Moreover, regulation is necessary to protect against

*The promise of the private sector lies in improved management with higher efficiency and increased access to private capital for maintenance and expansion. While the potential benefits are clear, the obstacles to private sector participation are often formidable.*

monopolistic practices. Regulation is also necessary to control externalities related to public health and the environment; as the social benefits exceed private benefits, investments must be promoted above what is privately profitable.

At the same time, the obstacles to private sector participation may appear formidable. Lack of adequate legislation for private sector involvement and non-enforcement of property rights and contracts are common obstacles, as are bureaucratic inertia and lack of confidence in the private sector among policy makers. Other constraints include unfavorable public opinion, fear of foreign operations, and reluctance to deal with labor problems. The constraints may also be on the supply side, with the private sector showing too little interest to ensure competitive bidding.

Table 2 Private Sector Activities and Institutional Arrangements in Financing Water and Sanitation Services

<i>Country</i>	<i>Activity</i>	<i>Institutional Arrangement</i>
Bangladesh	Solid waste disposal	Contractual basis per piece of work
	Operation of community latrine	Lease
	Community maintenance	Advance prequalification and quotation (similar to retainership)
India	Garbage collection and disposal	Contractual
	Maintenance of parks and gardens	Contractual
	Operation of water supply and sewerage pumping stations	Contractual
	Informal markets for water supply, solid waste collection, recycling	Contractual
	Water distribution	Private vending of water
Indonesia	Bottled water source/water supply system development	BOT
	Water distribution	Private vending of bottled
Malaysia	National Sewerage System	Contractual basis per piece of work
	Water supply	BOT
	Garbage disposal	Contractual
Pakistan	Water and Power Development Authority	Sale of equity
Thailand	Water supply	BOT
Philippines	Water distribution	Private vending of water
	Garbage disposal	Contractual

Source: Pernia et al. (1996)

## PRIVATE CAPITAL FLOWS

At a time when official development assistance (ODA) is declining in real terms, the rapid growth of private capital flows to developing countries since the early 1990s is a welcome development. The share of private capital flows in aggregate resource flows to developing countries has almost doubled from about 40% in 1990 to about 80% in 1996, or three to four times the level of official aid. The share of capital flows in fixed investment in developing countries grew from 3.7% in 1990 to 15% today. Foreign direct investment (FDI) amounts today to nearly \$100 trillion. FDI is more important to sustainable development than loans or portfolio equity flows because it is accompanied by transfer of technology, know-how, and management skills. It is also less volatile and more profitable.

The main drawback of private capital flows in general, and FDI in particular, is their propensity to gravitate toward middle-income countries with sound macroeconomic policies. The poorest countries that need them the most tend to receive the least. About 80% of private capital flows and 75% of FDI since 1990 went to twelve middle-income countries, mostly in Asia (60%) and Latin America (20%). The ten top recipients of FDI were Argentina, Brazil, China, India, Indonesia, Korea, Malaysia, Mexico, Russia, and Thailand. The World Bank projects that foreign investment in developing countries will continue to grow at the rate of 7-10% per year over the next decade under the impetus of liberalization, privatization, technological innovation, falling transport and communication costs, capital mobility, and growing financial integration.

What is the role of private capital flows in sustainable development? On the one hand, private capital flows make up for declining ODA and inadequate resource mobilization at home. On the other hand, as already noted, countries with greatest needs receive the least. Nor is private investment automatically channeled to sustainable development activities. Traditionally, the social and environmental sectors have been least attractive to foreign investors, partly because of legal restrictions against private sector involvement in public service monopolies. Moreover, without enforcement of environmental regulations and freedom to charge user fees, or to raise tariffs to cover costs (including an acceptable return to capital), these sectors were not attractive to private investors, domestic or foreign.

Recently, the policy environment for private sector involvement in environmental and economic infrastructure began to change as an increasing number of countries have embarked on ambitious liberalization, deregulation, and privatization programs. The development of innovative financing arrangements, including manage-

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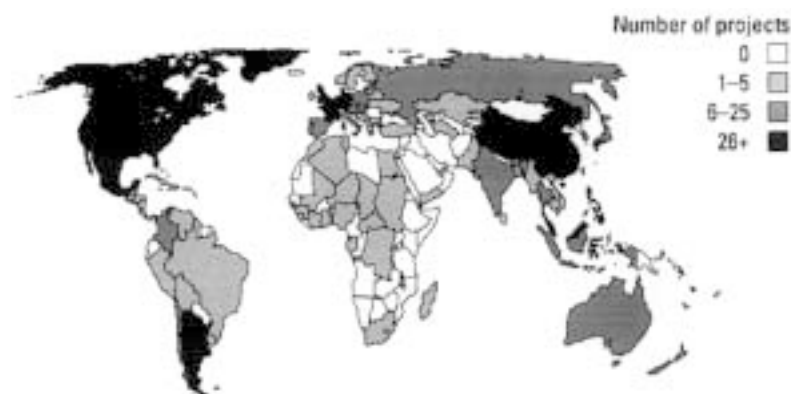
ment contracts, lease concessions, build-operate-transfer and private-public sector partnerships made it possible for the private sector to enter into infrastructure development. Increased use of competitive bidding, coupled with environmental performance bonds and regulatory controls, has improved the economic efficiency and environmental performance of FDI and hence its contribution to sustainable development. Recent years have witnessed a strong trend toward the privatization of state-owned enterprises and public utilities and concessions to private developers of infrastructure including power generation, transportation, water supply and sanitation, waste treatment, and others. Indeed, FDI has gradually shifted from resource extractive industries toward infrastructure and public service provision which are generally more environmentally benign, especially when accompanied by regulatory safeguards.

#### TRENDS AND PROSPECTS IN PRIVATE SECTOR PARTICIPATION

The private sector participation in infrastructure and public service provision grew steadily since the mid 1980s. Driven by poor public sector performance, fiscal crises, and technological advances, deregulation and privatization spread from the US, UK, Chile and New Zealand during the 1980s to over eighty countries today (Map 1). According to Sow and Shin (1995), since 1984 eighty-six countries have privatized 550 infrastructure companies with assets of US\$ 360 billion, and an equal number of countries initiated over 570

*FDI has gradually shifted from resource extractive industries toward infrastructure and public service provision which are generally more environmentally benign.*

Map 1 Private Participation in Infrastructure  
(number of projects by region, 1984 to September 1995)



Source: World Bank, Private Infrastructure Project Database, September 1995.

private greenfield projects worth over US\$ 300 billion. This amounts to an average private sector investment in infrastructure of about US\$ 60 billion a year, or US\$ 600 million per project.

The private sector played an increasing role in all infrastructure sectors, including power, natural gas, telecommunications, transport (railways, roads, ports, and airports), waste treatment, water supply, and sanitation. Privatizations were dominated by the sale of power utilities and telecommunications followed by sales of waste and transport companies, while greenfield investments were directed to power and transport such as road tolls, tunnels, and bridges (see Figure 1).

Most privatization activity is concentrated in Latin America and the European Union, while the rapidly-growing economies of Asia emphasized greenfield investment (Figure 2), with the Philippines and China leading the way with scores of projects in power and transport. Recent privatizations in Asia include water supply, road and traffic management in the Philippines, and the urban rail system development and waste management in Thailand. Table 2 summarizes private sector activities and institutional arrangements in financing water and sanitation services in Asia, most put into place in the past five years. In Latin America, Mexico leads with fifty-four projects, mostly toll roads. Argentina has privatized forty-eight infrastructure companies, while Chile, Mexico, and Uruguay have major privatization programs under way. Other recent privatizations include power in Argentina and telecommunications in Costa Rica. The regional distribution of privatization and new investments is depicted in Figure 2, while Tables 3 and 4, respectively, list the top ten private infrastructure investment projects and top ten infrastructure privatizations since 1984, according to the World Bank Private Infrastructure Database (which excludes airline privatizations and waste collection contracts).

A World Bank (1996) review of the post-privatization performance of 60 companies reveals an 11% improvement in efficiency, 44% improvement in investment, and 45% improvement in profitability; employment and tax payments also increased. It is important also to note the global nature of the trend and the advancement of innovative approaches in the 1990s that made privatization socially more equitable and politically more acceptable. For example, in Bolivia the proceeds from privatization were used to capitalize the pension funds, while in the Czech Republic the public assets were privatized to the entire population through a voucher system.

*Since the mid 1980's the private sector has played an increasing role in all infrastructure sectors, including power, natural gas, telecommunications, transport, waste treatment, water supply, and sanitation. A World Bank review of 60 companies reveals an 11% improvement in efficiency, 44% improvement in investment, and 45% improvement in profitability; employment and tax payments also increased.*



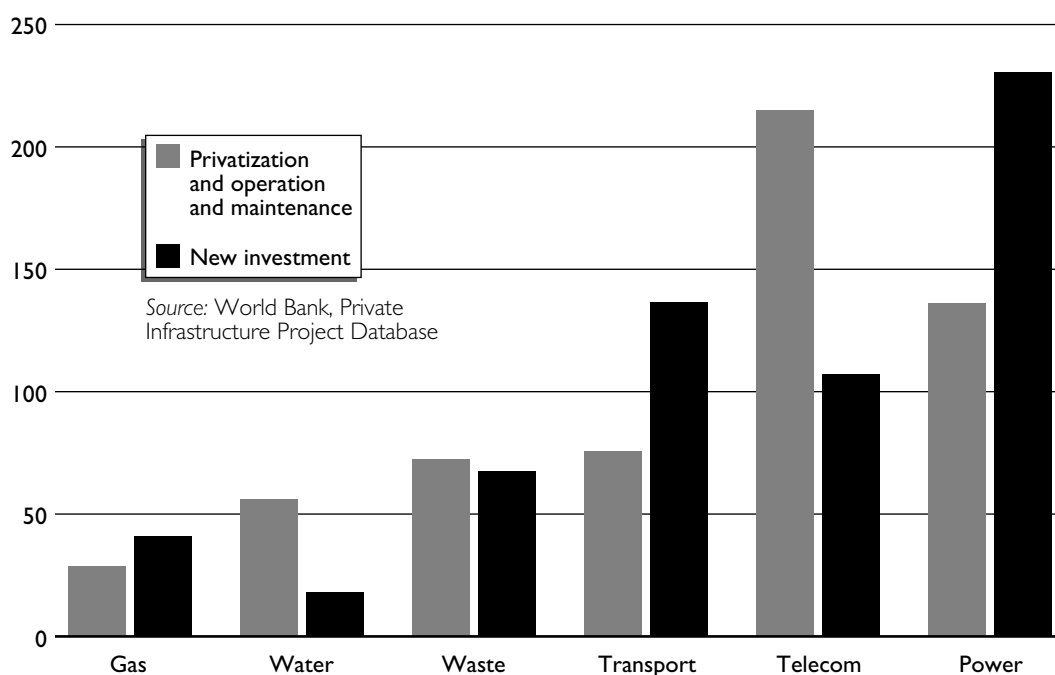
The World Bank database is also tracking 2,273 potential projects worth over US\$ 1.8 trillion, with an average project size of US\$ 800 million. Unlike the period of 1984-95, when the private sector role in public infrastructure was evenly divided between greenfield investments and privatizations, during the next decade new investments are expected to account for over 85% of the market. Seventy-five new deals a year are sufficient to sustain the market at \$60 billion a year, an amount equal to the total official development assistance (ODA). Table 5 lists the top ten potential private infrastructure projects in September 1995.

#### OPTIONS FOR PRIVATE SECTOR PARTICIPATION

There is a wide spectrum of options for private sector participation in infrastructure and public service provisions that vary in the respective roles of the public and private sectors as they concern ownership, management financing, risk sharing, duration, and contractual management with the users. These options may be classified into two groups: (a) those that retain public ownership of the assets while contracting out management, operation, and even investment, and (b) those that involve at least partial or temporary private ownership of assets. The first group includes service contracts, management contracts, lease arrangements, and concessions. The second group includes: BOOT (Build-Own-Operate-Transfer

*During the next decade new investments—rather than privatizations—are expected to account for over 85% of the market.*

Figure 1 Private Infrastructure Projects, by Sector, 1984 to September 1985

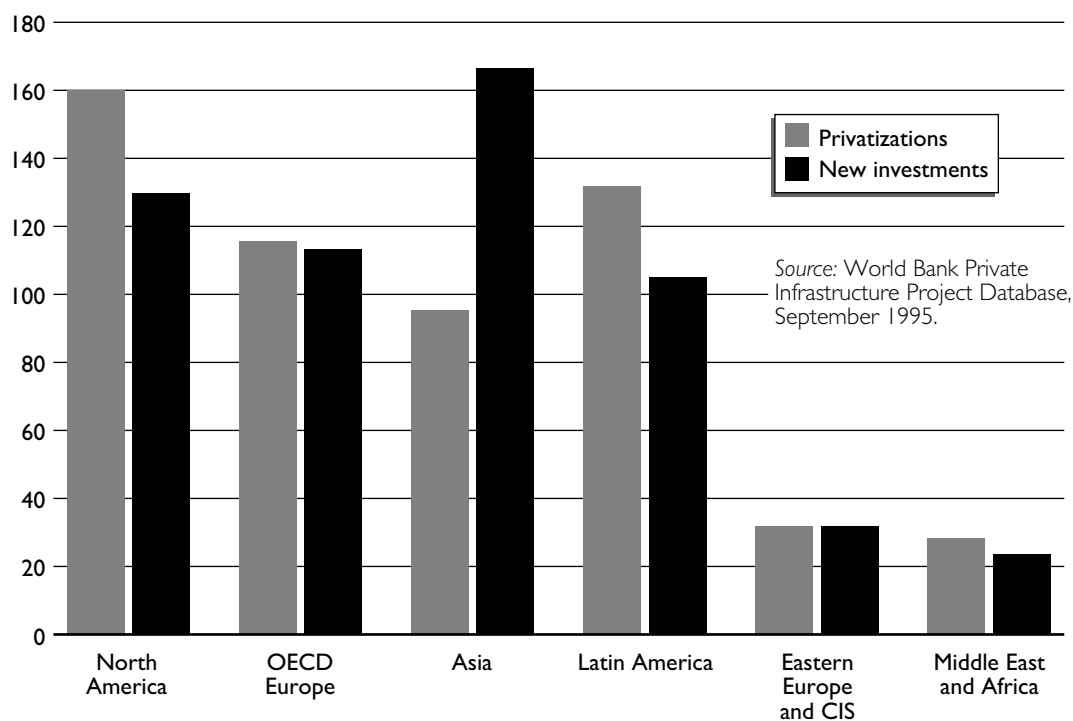


and its variations, BOT and BOO), reverse BOOT (whereby the public entity builds the infrastructure and progressively transfers it to the private sector); joint ownership or mixed companies, and outright sale or divestiture.

All options promote to a differing degree commercial viability, operational efficiency, increased competition, improved cost recovery, and performance-based compensations (in most cases). The wide range of options allows flexibility and the potential to move from less risky arrangements without private sector investment to riskier arrangements involving a progressively larger share of private investment as credibility and confidence among the parties grow. As BOOT contracts involve gradual transition to the public authority or to the private contractor, they constitute a useful transitional mechanism for countries without prior private sector involvement. Joint ownership or mixed companies is a risk sharing arrangement that helps attract private sector involvement. For an innovative and fairly successful private sector concession in water supply and sanitation, with important lessons for other countries, see Appendix.

*A wide range of options allows for a progressively larger share of private investment as credibility and confidence among the parties grow.*

Figure 2 Private Participation in Infrastructure by World Region



## MOBILIZING PRIVATE SECTOR RESOURCES

One way of mobilizing private sector resources for sustainable development investment is by removing barriers, such as public monopoly and underpricing, that inhibit the participation of the private sector in the provision and management of infrastructure and public services. Such barriers affect efficient electricity production, renewable energy, water supply and sanitation, waste treatment, solid waste collection, etc. Another way is by entering into private-public sector partnerships, co-financing arrangements, and joint ventures.

In mixed and formerly planned economies where public utilities, state enterprises, and parastatals absorb a significant portion of the state budget, privatization may free public resources for sustained development. Where state enterprises are inefficient and/or loss-making, privatization is equivalent to subsidy reduction and improved cost recovery. A privately provided service would try to recover costs by charging users for its use. A private company is more likely to elicit the users' preferences as to the type and level of service and their willingness to pay for it than a state enterprise or public bureaucracy. Charging users full cost for services like water supply, sanitation, and solid waste collection means better cost recovery, smaller budget deficits or larger public sector savings, better service, and wider coverage.

*A private company is more likely to elicit users' preferences as to the type and level of service, and their willingness to pay for it, than a state enterprise or public bureaucracy.*

Table 3 Top Ten New Private Infrastructure Investment Projects, 1984 to September 1995

<i>Location</i>	<i>Project</i>	<i>Contract</i>	<i>Cost (\$US, millions)</i>
France / United Kingdom	Solid waste disposal	BOT, 55 years	19,000
Taiwan (China)	Taipei mass rapid transit system	BOT	17,000
Japan	Kansai International Airport	BOT	15,000
Argentina	Buenos Aires water and sewer services	ROT, 30 years	4,000
Thailand	TelecomAsia communications network	BTO, 25 years	4,000
China	Daya Bay nuclear power plant, Phase I	BOO	3,700
Malaysia	North-South toll expressway	BOT, 30 years	3,400
Mexico	Petacalco coal-fired power plant	BOT	3,000
Thailand	Bangkok Elevated Road and Train System	BOT, 30 years	2,981

**BOO:** build-own-operate    **BOT:** build-operate-transfer    **BTO:** build-transfer-operate    **ROT:** rehabilitate-operate-transfer

*Source:* World Bank, Private Infrastructure Project Database.

In order to attract private capital and managerial talent, a series of economic, financial, legal, and institutional reforms is necessary: prudent macroeconomic management practices, including a stable and convertible currency; an institutional and legal framework to ensure enforcement of contracts; demonopolized niche sectors and extended private sector participation and contestability to sectors with more difficult regulatory issues; overhauled regulatory framework; removal of subsidies and allowance for tariffs to reflect costs, removal of barriers to foreign capital; allowance for repatriation of profits and encouragement of foreign participation; and strengthening of the local capital market and improved access to the international capital market. Table 7 depicts government strategies for promoting private sector participation in infrastructure and public service provision.

Private sector participation does not mean that the public sector loses control but rather that it adopts a new set of rules (from investor and operator to overseer and regulator), based on comparative advantage. To encourage the private sector to take up the investor and operator role in areas often reserved for the public sector, the legal basis for private sector involvement must be established.

*A series of economic, financial, legal and institutional reforms is necessary. Private sector participation does not mean that the public sector loses control but rather, that it adopts a new set of rules.*

Table 4 Top Ten Infrastructure Privatizations, 1984 to September 1995

<i>Location</i>	<i>Privatization</i>	<i>Share sold (percent)</i>	<i>Price (\$US, millions)</i>
Japan	Nippon Telegraph & Telephone (NTT)	35	70,500
United Kingdom	British Telecom	100	22,800
United Kingdom	British Gas	100	7,600
Mexico	Telefonos de Mexico (Telmex)	100	7,540
France	Elf Aquitaine	100 <sup>a</sup>	6,200
Germany	Veag	38	5,144
Singapore	Singapore Telecom	11	3,800
Netherlands	Koninklijke PTT Nederland	30	3,750
United Kingdom	Scottish Power	100	3,665
Argentina	Telecom Argentina (Entel North)	100	3,200

<sup>a</sup> Company was already 49% privately owned before the first sale of government shares in 1990.  
Source: World Bank, Private Infrastructure Project Database.

Policy makers in developing countries need to develop a better appreciation of the potential role (benefits and risks) of private sector involvement in a public sector monopoly. Political commitment at the highest level and consensus of the main stakeholders are key to successful private sector participation (PSP). The most suitable PSP option must then be selected, taking into account the country's political, legal, and cultural circumstances and financial and technical features of the sectors and projects concerned. The private sector services must be procured through a well-prepared, transparent, and universal bidding and award process. Contractual arrangements must be sufficiently robust to withstand the test of time and public scrutiny. Finally, there must be a formal regulatory body, with political independence and transparency, to enforce the terms of the contract, to protect the consumers from monopolistic behavior and to ensure acceptable service and compliance with environmental standards.

Privatization and other forms (e.g. joint ventures and partnerships) of involving the private sector in financing sustainable development are likely to accelerate in coming years as governments seek to mobilize resources and to improve infrastructure and public services. The global market for environmental investments alone is projected to exceed \$600 billion a year by 2000 (IFC 1992).

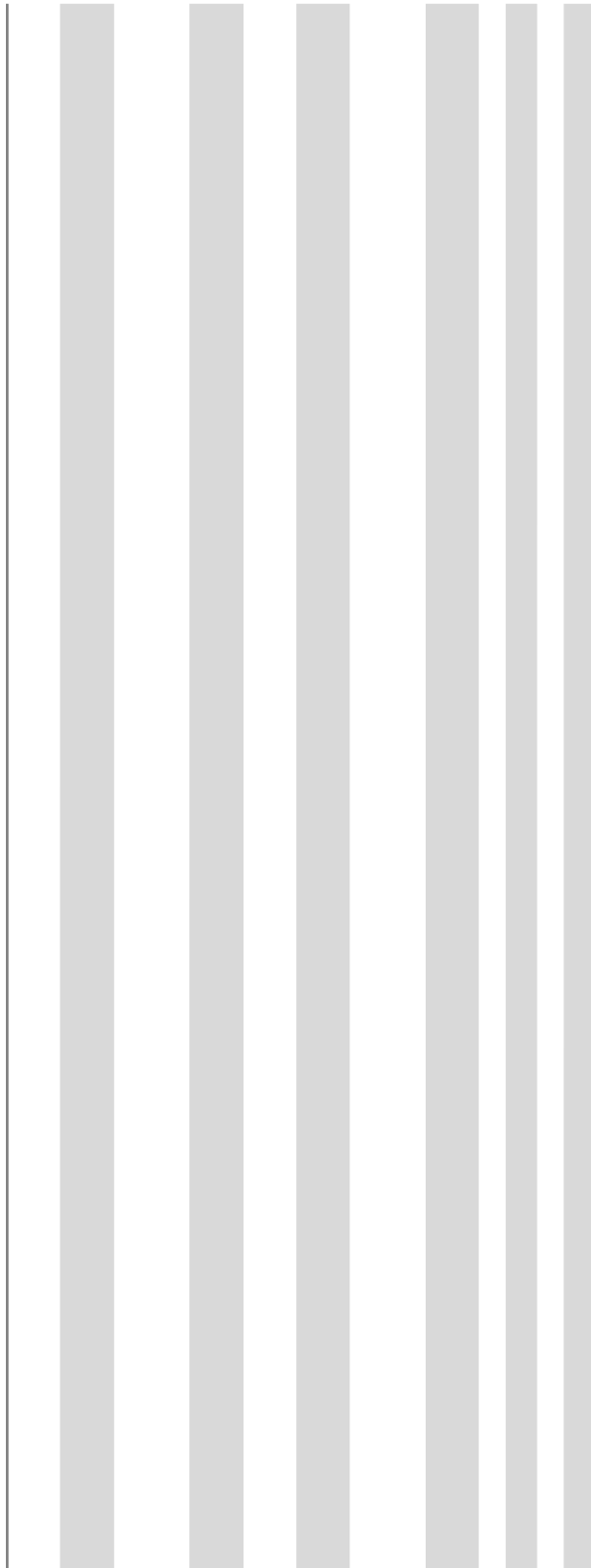
Table 5 Top Ten Infrastructure Privatizations, 1984 to September 1995

<i>Location</i>	<i>Project</i>	<i>Contract</i>	<i>Cost / price (\$US, millions)</i>
Russia	National long-distance telephone network	BO license	40,000
Belarus / Germany / Poland / Russia	Yamal gas pipeline	BOO	39,700
Hong Kong	Chek Lap Kok airport	BLO	20,000
Russia	RAO Gazprom	Privatization, 60%	20,000
Taiwan (China)	Taipei-Kaohsiung high-speed rail	BOT, 30 years	17,400
India	West Bengal coal-fired power plants	BOT	12,700
Germany	Deutsche Bundespost Telekom	Privatization, 25%	9,750
United Kingdom	Railtrack	Privatization	9,500
China / Hong Kong	Beijing-Hong Kong highway	BOT	8,000
Taiwan (China)	Kaohsiung rapid transit system	Privatization	7,600

**BOO:** build-own-operate **BOT:** build-operate-transfer **BTO:** build-transfer-operate **ROT:** rehabilitate-operate-transfer

Note: Excludes the US\$ 52-billion Three Gorges Dam in China. The dam is under consideration as an independent power project but no detailed proposal has appeared.

Source: World Bank, Private Infrastructure Project Database.



The key is to ensure that (a) the poorest countries benefit from these trends by adopting appropriate policies, and (b) that adequate safeguards such as regulations, EIAs, and environmental performance bonds are used to ensure that rapidly growing private sector investments are increasingly directed to sustainable development. The World Bank estimates that about 100 countries are making good progress in introducing incentives for redirecting private finance to sustainable investments (A. Steer quoted in UN 1996). Sixty-five countries have sought financial support from the World Bank to reform their environmental policy framework so that private investment flows will be directed towards more sustainable investment. Market-based instruments are a vital way of helping reshape financial flows.

## CONCLUSION

While some countries are still debating whether they should open their infrastructure sectors to the private sector and to foreign investment, for most countries the question is more “how” than “whether.” Despite the uneven performance and skewed distribution of private entry into infrastructure financing, development, and management (relating to varying levels of political commitment and investor perceptions of country risk), the overall experience has been, on balance, very positive and holds valuable lessons for future projects and new entrants. The most important lesson from past experience is that while certain basic reforms (macroeconomic stability, convertible currency, ability to repatriate profits, enforcement of contracts, etc.) are fundamental and constitute a sine qua non condition for attracting long-term investment, a near-perfect policy environment is not necessary to begin the process of private sector involvement for three reasons:

First, successful conclusion of a few transactions helps policies to evolve and reforms to deepen by giving policy makers and investors experience and building public support for more liberalization.

Second, given political commitment, even poor countries with a difficult economic and policy environment can attract private sector participation if the rewards are structured properly to match (IFC 1996). The allocation and management of risks between the private sector and the government is fundamental to achieving closure. Involvement of multilateral agencies such as the International Finance Corporation (IFC) and the Multilateral Investment Guaranteeing Agency (MIGA) increases the comfort level for private investors.

Third, there is a wide spectrum of options and arrangements for private sector participation ranging from service and management contracts (that involve private investments and intermediate levels

*The key is to ensure that (a) the poorest countries receive benefit from these trends by adopting appropriate policies, and (b) adequate safeguards are used to ensure that private sector investments are increasingly directed toward sustainable development.*

of risk) to BOOT and divestiture that involve higher levels of investment and risks but also potentially higher benefits. Governments of poor countries, with limited prior experience in private sector participation in infrastructure and public service provision, may want to begin with service and management contracts and negotiated entry and progressively move to concessions and privatizations through competitive bidding as they acquire experience, confidence, and credibility and build local constituencies in support of greater private sector involvement.

Governments must be prepared to gradually shift their role from being the principal financier and operator of infrastructure and service provision to being the overseer and regulator. Increased private sector participation in public service monopolies calls for tough governments that hold the private sector accountable but allow it the freedom and flexibility to figure out the most efficient way to provide a service of specified quantity and quality. It is necessary to strike a balance among various the needs of the private sector to earn a reasonable rate of return, of the public sector to extract fees and charges, and of consumers to receive a high quality service at affordable rates.

The key for poor countries is to introduce more stable, consistent, and predictable policies and to develop private-public sector partnerships and flexible financing packages that combine domestic resources, foreign investment, and development assistance and exploit the synergies between private and public, domestic and external sources. At the same time, governments must take actions to (a) increase public savings by reducing expenditures on money-losing state enterprises and distortionary subsidies; (b) increase private savings by lowering tax rates and expanding the range of capital market instruments (e.g., pool of private pension funds); and (c) introducing legal reforms and innovative financing mechanisms and partnerships to allow the private sector to enter into fields that traditionally were considered the exclusive domain of the public sector.

The international community has a very important role to play in spreading private capital flows more widely, in helping poor countries take the initial critical steps, and in promoting the sharing of experiences among developing countries. Multilateral institutions have made important contributions and hold the potential of playing an even more important role in the future. The World Bank through MIGA is guaranteeing funds to governments and to the private sector to reduce risks. MIGA has leveraged foreign direct investments through such investment guarantees. IFC, the World Bank's private sector arm, is providing loans, equity, and other



financial instruments and services to the private sector in developing countries. With governments in developing countries giving the private sector a larger role in infrastructure financing, development and management, IFC has been increasing its role in financing private sector infrastructure projects. During 1967-87, IFC approved only seven infrastructure projects, costing \$517 million, of which IFC contributed \$78 million. In 1988 alone two projects worth \$409 million were approved with an IFC share of \$54 million. Since 1994 over 30 infrastructure projects were approved annually worth over \$5 billion with IFC's share between \$500-700 million.

Official development assistance (ODA), though declining in real terms, can be used more aggressively (than it has in the past) to motivate reform and to leverage more capital flows to countries that are not receiving much, as in Africa, and to direct it towards sustainable infrastructure, and sectors such as health, education, and environmental protection. ODA can be better designed to create favorable conditions for private sector involvement through co-financing, underwriting country risks, and promoting joint ventures and venture capital.

The UN organizations can play a catalytic role in encouraging and supporting developing countries to adopt sound macroeconomic policies and outward-looking growth strategies, to develop mechanisms that can reduce the volatility of private capital flows, and to better share and manage risks. The UN can play a key role in helping to enhance the skills of the public sector as an overseer and regulator of private sector participation in infrastructure and public service provision. There is an acute need for capacity building in preparing state enterprises and utilities for privatizations in holding competitive and transparent bidding that attracts universal competition, in selecting appropriate private participation options, and in designing enforceable contracts. UNDP through Capacity 21, the Public-Private Partnerships Programme, and other programs can help enhance the ability of governments to introduce regulatory regimes and contractual arrangements that fairly share and mitigate business risks and minimize and manage environmental risks. Regulators must be able to confront experienced foreign operators, enforce compliance with the terms of the contract, protect consumers from monopolistic practices, and create a business environment that ensures commercial viability that attracts the private sector. This requires competence and independence from political interference. The international community can help developing countries share experiences and find mechanisms to optimize the private sector's contribution not only to infrastructure but to sustainable development in general.

Table 7 Government Strategies for Encouraging Private Infrastructure

	<i>Encourage Initial Private Entry</i>	<i>Some Private Participation</i>	<i>Extensive Private Participation</i>
<i>Overall</i>	Prudent macroeconomic management, including currency convertibility, is a priority. An institutional / legal framework is necessary to ensure contracts can be implemented.		
<i>Sectoral</i>	Demonopolize niche sectors, allowing entry to cellular telephones, power generation, ports etc. Use concessions and BOOs as appropriate to sector and political acceptability.	Broaden the scope of private entry and competition. Initiate overhaul of regulatory framework.	Extend private sector participation and contestability to sectors where regulatory issues may be more difficult.
<i>Size</i>	Focus initially on small projects. Break large projects into components.	Medium-size projects should be financeable.	Project size should not be a constraint.
<i>Sectoral and regulatory issues</i>	Start process of removing subsidies, preferably by announcing (and adhering to) a phased program. Allow tariffs to be automatically adjusted to reflect changes in costs.	Assess regulatory options. Increase competition within and for markets; regulate natural monopolies.	Regiew regulatory experience. Convert BOTs to concessions by announcing that they will be re-bid. Maximize competition.
<i>Privatization of SOEs</i>	Consider (partial, if appropriate) privatization of most financially viable SOEs (e.g. telecoms)	Privatize a broader range of SOEs.	Complete privatization process. Make tariffs fully commercial.
<i>Foreign participation</i>	Remove or minimize barriers to foreign capital and expertise.	Encourage foreign participation in privatization.	Remove remaining constraints to foreign participation.
<i>Sponsors</i>	Ensure strong sponsors, technically and financially. Ensure that they make significant equity contributions.	Scope for greater participation by technically and financially sound local sponsors, and demonstration effects.	
<i>Financial issues</i>	Adjust regulations to allow foreigners to repatriate dividends. Allow use of escrow accounts if that gives extra comfort to foreign investors.	Access international capital markets. Strengthen local capital markets: public share issues, investments by local pension and insurance funds.	Improve access to international capital through better country risk rating. Encourage private rating agencies, re-insurance industry, full use of foreign and local capital markets.
<i>Government and risk</i>	Where really necessary, guarantee SOE contractual obligations, and build in buyout provisions for private sponsors. Do not subsidize finance to private or public enterprises.	Assume less risk as private participation increases; adapt regulatory framework on the basis of experience.	Limit commercial presence of government. Focus government involvement on providing enabling environment.

## APPENDIX: THE BUENOS AIRES CONCESSION FOR WATER SUPPLY AND SANITATION

The greater Buenos Aires water supply and sanitation system, operated by a public company (Obras Sanitarias de la Nacion, OSN) was plagued through the years by problems common to public water utilities throughout the developing world. Coverage was only 70% for water supply and 58% for sanitation, while only 5% of the waste water received any treatment before dumping into natural water bodies. The service was of poor quality and unreliable. Infrastructure was poorly maintained and unaccounted-for water was as high as 45% of the water produced. Water meters were installed at only 20% of the connections; meter reading and billing were highly irregular, and water consumption reached 400-500 liters per capita a day - twice the norm for metered and well-managed systems. The public utility was grossly overstaffed with 8,000 employees, or 8-9 employees per connection compared with 2-3 by efficiently operating systems. At the same time, population growth and urbanization were expanding the demand for additional coverage. The cost of rehabilitation of the deteriorating system and expansion to reach 100% coverage was estimated at several billion dollars over the next 20-30 years, which was clearly beyond the capacity of both the utility and the state to mobilize.

In 1993, the government of Argentina privatized water and sewage services for Greater Buenos Aires as part of a massive privatization program that began in 1990, with World Bank support, and included virtually all public services and federally-owned enterprises such as electricity, telephone, railways, airlines, roads, and ports. The private sector participation option chosen for water and sanitation was a 30-year full concession that allowed the assets to remain under public ownership while the operation, maintenance, rehabilitation, expansion, and wastewater treatment were transferred to a private concessionaire. After a successful process of preparation and bidding, the concession was awarded to *Aguas Argentinas*, a consortium of foreign and local firms led by *Lyonnaise de Eaux-Dumez*, that offered a 27% discount to the prevailing public water tariffs. Thus, competition was effective in reducing costs. It also mobilized \$4 billion over the life of the contract to meet the performance targets of the concession, which include 100% coverage in water supply and 90% coverage in sanitation by year 30, a reduction in the unaccounted-for water from 45% to 25%, and

an increase in sewage treatment from 4% to 93%. Over the first five years alone, the concessionaire will invest \$1.2 billion, or \$240 million a year - 12 times more than the historic annual investment made by the public utility in the last decade. To regulate and control the concession, and protect consumers against monopolistic practices, the government established a regulatory agency, *Ente Tripartito de Obras y Servicios Sanitarios* (ETOSS) with participation of the federal, provincial, and local government with a budget of \$8 million to be financed through a user surcharge of 2.7% of the water and sewage bill collected by the concessionaire. The regulatory agency also enforces water and effluent quality standards based on international norms introduced prior to bidding.

During the first three years of operation, accelerated rehabilitation of the system led to a reduction of water losses from 45% to 25%, and coverage increased by 10% with no increase in production. The population receiving sewage services increased by 8%. Prices were reduced initially by 27% but increased by 13.5% in 1994 to further accelerate rehabilitations provided in the contract clause; still, water prices are 17% lower than those charged by the public utility. The staff was reduced by 47% through severance payments by the government and a voluntary retirement program by the concessionaire. Labor productivity rose and new recruitment is now underway as the concessionaire is responding to increasing demand for water and sanitation services. The table below summarizes these improvements.

While the overall experience has been clearly positive and the model is now being adopted by other Argentine provinces and other countries in Latin America, there have also been teething problems with regard to negotiations with the labor unions and

#### Impact of the Greater Buenos Aires Water Concession

Indicator of Performance	Changes from May 1993 to December 1995
Increase in production capacity (%)	26
Water pipes rehabilitated (kms)	550
Sewers drained (kms)	4,800
Decline in clogged drains (%)	97
Meters upgraded and installed	128,500
Staff reduction (%)	47
Residents with new water connections	642,000
Residents with new sewer connections	342,000

Source: Aguas Argentinas.

regulation. Indirect labor costs remain high as the concessionaire continues to provide fringe benefits traditionally available to civil servants. The regulatory agency, staffed with former utility employees, find it difficult to give up the state's day-to-day management role and focus on its regulatory and contract enforcement role.

The successful privatization of the supply and sewage services in Buenos Aires contains many important lessons for private sector participation in water and sanitation throughout the developing world. First, privatization must receive the endorsement of major stakeholders, enjoy political commitment at the highest level, and be part of a comprehensive program of economic reforms. Second, political, technical, legal, commercial, and financial risks must be assessed and alleviated through appropriate mechanisms. Third, all available options for private sector participation should be considered and the one best suited to the country's political and cultural conditions, and the sector's features, must be selected; the assets need not be privatized to improve efficiency and attract capital.

Fourth, the regulatory framework and regulatory institution must be established, and the technical and financial feasibility of the concession studied prior to bidding. The regulatory entity must be strong enough to regulate an experienced international concessionaire. Fifth, while adequate preparation and time should be allowed to ensure universal bidding, eligibility should be confined to qualified bidders through a prequalification process. Sixth, sensitive staff reduction issues can be effectively dealt with through attractive retirement packages jointly financed by the government and the concessionaire. A final lesson is that the contract should be realistic and specific to minimize conflicts yet be flexible enough to allow for adjustments for unforeseen or substantially altered circumstances.

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## THEODORE PANAYOTOU

Theodore Panayotou is currently a Fellow of the Harvard Institute for International Development (HIID), Director of the Institute's International Environment Program, and a faculty member of the Department of Economics at the John F. Kennedy School of Government at Harvard University. Over the past 20 years Mr. Panayotou has taught courses in environmental economics, has carried out research and training in environmental management in many countries, and has advised governments, including those of China, Costa Rica, El Salvador, Laos, Malaysia, Panama, the Philippines, Thailand, Vietnam, and others.

## Incentives for Private Sector Financing of Sustainable Development

David Pearce  
Centre for Social and Economic Research on the Global Environment  
University College, London

### ABSTRACT

Private sector financing of sustainable development will not occur unless the context for investment is one in which the risks associated with investment are acceptable, that is, where markets are liberalised, political governance is secure and democratic, and structural adjustment is occurring. Private sector flows of funds need to be modified to meet the demands of sustainable development, primarily that the technologies transferred to developing countries should be clean. Incentives to the private sector to invest in clean technologies must extend beyond regulatory compliance and "green" image; the incremental costs of clean technologies might be partly met from public funds in the form of "service payments" for environmental benefits received from clean technologies. Joint Implementation provides an outstanding example of how the private sector can secure financial gains through the creation of a market where none previously existed; such "global markets" need to be established before the private sector can appropriate the economic value of non-market benefits.

### FINANCING AND FUNDS FOR SUSTAINABLE DEVELOPMENT

There are three broad classes of policy that are required if the world is to aspire to, and perhaps achieve, sustainable development. The first two involve no significant change in the financing of economic development, although they have implications for financing. The third explicitly addresses the issue of financing. The first two policies are:

- (a) campaigns, persuasion, and appeal to moral sense about the environment;
- (b) the removal of those distortions in local, national, and international economies that discriminate against sustainable development.

Both must be pursued. It is a matter of judgment as to which is the more important, but the appeal to moral sense is inherently risky. Virtue is almost certainly an acquired social behaviour based on fairly elementary game theoretic precepts: it is in the self interest of all to be virtuous, as several major essays have recently pointed out (Ridley 1996, Frank 1988, Wilson 1993). If appealing to moral sense is intended to go beyond what is mutually advantageous it will surely fail. For many this is an unpalatable conclusion, but it is arguable that opposition to these views has created a stalemate in the public discourse on sustainable development where moralists prevail and the more pragmatically minded are often not heard.

Removing distortions is extremely important. Distortions include financial subsidies, failures to tax the rents (profits) of exploit-

ative industries at a high enough level, and inadequate land tenure arrangements. To take just one example, subsidies to natural resource exploitation are pervasive, though encouragingly declining in some parts of the world. Major polluting and resource depleting activities are encouraged with subsidies to energy, water, fertilisers, pesticides, and land for development. Estimates of subsidies vary, with some suggesting that they amount to one trillion ( $10^{12}$ ) dollars annually. It is certainly possible to arrive at figures of 0.75 trillion dollars on the basis of available evidence (Maddison et al. 1997). It seems clear that a major effort to reduce and restructure these subsidies would contribute substantially to the prospects for sustainable development (De Moor 1997).

The third policy area requires a focus on the flows of funds that are available for investment in new technology, infrastructure, public health and education, and the environment. In particular, the critically important funds are those available to developing countries since, by and large, the developed economies do not suffer shortages of financial capital. (This does not mean that the structure and quality of their investment policies is necessarily consistent with sustainable development: they are almost certainly not). Flows of funds may be divided into internal and external flows. Internal funds are those available from savings and taxes. External funds are those arising from official foreign aid and from direct foreign investment. Undoubtedly, internal finance is by far the most important of development funding. In 1994, for example, gross savings in low and middle income countries (World Bank classification) amounted to some \$1370 billion, more than seven times the total net resource flows from external sources. But there is considerable scope for greatly improving the role played by external finance.

Table 1 indicates flows of funds from rich to developing economies from 1986-1994. Significant changes have taken place over a very short time period in the nature of the funds available to developing economies. In 1986 official finance accounted for nearly 70% of all flows of funds to developing economies. In 1994 that proportion had fallen to under 40%. The proportionate role of private finance has risen from 30% to 60%, and within that private finance category foreign direct investment (FDI) has risen from 14% to 26% of total net resource flows, and bond lending from just over 1% to 18%.

Table 1 illustrates clearly that, if sustainable development is to be achieved, there has to be a far greater focus on involving the private sector in sustainable investment policies.

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### PRIVATE SECTOR FINANCE AND THE RISK CONTEXT

The sustainable development challenge for private sector finance takes two forms:

- a) The first is to direct those flows to countries where the challenge for sustainable development finance is greatest.
- b) The second is to modify the *nature* of the flows in such a way that they are more consistent with sustainability.

The direction of private finance has clearly benefited Asia and Central/South America most (over \$50 billion and \$40 billion respectively in 1994), leaving Sub-Saharan Africa with only several billion dollars and almost entirely dependent on official development assistance. Even within Latin America and Asia, just a few countries account for the major part of FDI: China, Brazil, Argentina, Malaysia, Indonesia and Thailand being the main developing country recipients. This suggests, as would be expected, that expanding private flows is dependent on the risk context in the recipient countries. Those most likely to attract private finance will almost certainly be those that have made the largest advances in market liberalisation and in secure governance. Continuing political instability in Sub-Saharan Africa, continued protectionism and tendencies to maintain economic distortions must militate against private finance. Indeed, the African economies that have engaged in successful adjustment policies have been the ones accounting for the modest private sector flows that have occurred.

The importance of these observations is that they establish the role of *risk security* in attracting private investment. Investment risks cannot begin to be reduced unless there is greater political stability in recipient countries. Less obviously, perhaps, economic risks can

*Flows of funds may be divided into internal flows and external flows. Internal funds are those available from taxes and savings. External funds are those arising from official foreign aid and from FDI. Expanding private flows in FDI is dependent on the risk context in the recipient countries.*

Table 1: Total net resource flows to developing economies 1986-1994  
\$ billion, current prices

	1986	1990	1994
Official development finance:	50.1	69.7	70.2
Export credits:	-0.6	4.7	3.2
Private flows:			
direct investment	10.0	26.4	47.0
international bank lending	7.0	15.0	21.0
bond lending	1.0	0.9	32.7
other private	3.3	4.4	4.0
grants by NGOs	3.3	5.1	5.7
(Total private flows)	(25.3)	(51.8)	(110.4)
<b>Total Net Resource Flows</b>	<b>74.8</b>	<b>126.2</b>	<b>183.8</b>

Source: OECD, 1995a

also only be reduced if structural adjustment policies are pursued at the macroeconomic level so that internal and external markets are liberalised. Those who have sought to criticise structural adjustment policies, particularly on environmental grounds, have tended to overlook this crucial linkage between adjustment and financial flows. Structural adjustment packages should certainly be designed carefully with environmental factors in mind, but it is not credible to argue that structural adjustment should not be pursued at all. It is only through market liberalisation, price reform, and controls on public expenditure that the context for FDI can be provided. This suggests that international agencies such as the World Bank and the International Monetary Fund, together with many bilateral agencies, need to convey the structural adjustment message more clearly and more sensitively to both recipient countries and the NGO community.

But international agencies can do more than this to provide a better risk-taking context for the private sector. They can use their influence and funds to underwrite risks taken by the private sector. Moreover, they can be selective about which countries and regions would be eligible for risk underwriting. It seems clear that the focus of such a procedure would be Africa rather than Asia, with Central and South America probably being a focus for some investments only. Underwriting risks can take various forms. It might be as simple and as basic as the provision of in-house information for the benefit of private investors. Informational barriers to private investment can often be considerable, particularly where the investment possibilities are in the environmental sector itself. Most international lending organisations have highly specific and up-to-date information on the existing and future regulatory stance of individual countries, although it may not always translate to dollar values of market size.

Underwriting might take the form of financial guarantees if private investors agree to extend investment finance over and above what conventional risk appraisal would consider the norm for that country. There are endless possibilities, and perhaps one of the more important would be the conditional provision of risk underwriting, where the conditionality relates to the environmental credentials of the private investment. Private investors will virtually always seek to comply with local environmental standards and regulations in the recipient country and many actually adopt the standards in their own base country. But in between there is a whole spectrum of investors who, while probably acknowledging the importance of environmental impacts, do little to go beyond minimum compliance with local standards. Of course, substantial financial assistance is

*Countries most likely to attract private finance will almost certainly be those that have made the largest advances in market liberalisation and in secure governance. It is only through market liberalisation, price reform and controls on public expenditure that the context for FDI can be provided. Economic risks related to investment can only be reduced if such structural adjustments are pursued at the macroeconomic level so that internal and external markets are liberalised.*

already given for environmental components of exports from donor countries (see, for example, Luken and Freij 1996). But the general picture remains that here is a rich area for further 'green conditionality' in assisting private investors.

*The essential conclusion is that private sector financing of sustainable development will not occur unless the context for investment is one in which the risks associated with investment are acceptable. In turn, that context has to be one where markets are liberalised, political governance is secure and democratic, and structural adjustment is occurring. Where risks remain, international organisations and donor governments can help by underwriting those risks more than they do currently.*

### MODIFYING THE NATURE OF PRIVATE FLOWS

The second requirement is to modify the nature of private financial flows so that they become more environmentally and socially sensitive. This is more than a matter of carrying out environmental impact assessments and meeting local or international environmental standards. It is also about changing the very technologies that are used in capital investments. The proper context is one where, for example, the decision is to invest not in a coal-fired power plant, but in one using natural gas or, better still, renewable forms of energy; where urban road building is reconsidered in favour of mass transit systems; or where the environment itself is seen as a major investment opportunity.

Such changes in the philosophy of private investment may come about in various ways:

- (i) through the evolution of markets, and in particular, as the cost of environment-friendly technologies comes down over time, making those technologies attractive to private investors simply because they are the cheapest;
- (ii) through information programmes which convey to private investors the financial and environmental benefits of clean technology;
- (iii) through forms of financing which effectively compensate the private sector for what may remain the higher cost of cleaner technologies when compared to conventional technologies.

*It is essential to modify the nature of private financial flows so they become more environmentally and socially sensitive. This is more than conducting impact assessments and obeying regulations. It is also about changing the very technologies that are used in capital investments.*

The first route to environmentally preferred technology can be facilitated by governments. For what matters is not the absolute cost of clean technology but its cost relative to conventional technology. It is just as important that conventional technology costs rise as that clean technology costs fall, and the former can be legitimately achieved by making conventional technology meet its full economic and environmental costs. Market-based instruments such as taxes, user charges and tradeable quotas offer the most efficient way of getting the full costs incorporated into the price system. Prior to their introduction, prevailing subsidies must be removed.

The evidence on the relationship between environmental policy and technical change has recently been usefully summarised by Ren J. Kemp (1997). Kemp's study shows that market-based approaches can be very important both in initiating technical change and in diffusing it through the economy. But he is cautious about market approaches as a means of securing "paradigm shifts" in technology, i.e. the major switches of technology that will be required for sustainable development. This is because economic instruments tend to operate 'at the economic margin' rather than at the level of wholesale change, and because political interference in the setting of taxes and charges almost always means that they are, in practice, too low for this purpose. Kemp prefers government procurement policies and the integration of clean technology into land use planning and industrial policy. But the central point remains: the evolution of clean technology can be substantially accelerated by ensuring that the prevailing technology with which it competes is priced at its full environmental and economic cost.

The second and third routes to improved private financing entail an informational and financing role for governments, international organisations, and NGOs. While there is some potential in cajoling and forcing the private sector to adopt cleaner technologies, it is more realistic to accept that private investors do not have the social and natural environment as their primary concern. They are there to make an acceptable return to their shareholders. If the world in general wants those investments to meet some sustainability objective, the world must be prepared to pay the private sector for costs it otherwise has no incentive to meet.

The principle is familiar enough with the operations of the Global Environment Facility. The GEF meets the 'incremental cost' of public investments by paying in grant form the difference between the costs of clean and conventional technology. Conventional technology makes up the 'baseline' cost, and clean technology, in the form of lower greenhouse gas intensive technology, makes up the environmentally preferred option (Pearce 1995).

*Governments can facilitate the route to environmentally preferred technology. What matters most is not the absolute cost of clean technology, but its cost relative to conventional technology. It is just as important that conventional technology costs rise as it is that clean technology costs fall. Market-based instruments such as taxes, user charges, and tradeable quotas offer the most efficient way of getting the full costs incorporated into the price system.*

What is required is a twofold extension of the notion of incremental cost. First, it needs to be extended to the private sector, and second, it needs to go beyond the global pollutants that are the concern of the GEF to embrace the local pollutants. As well as carbon dioxide, then, incremental cost funding would be available for reducing, say, localised particulate matter concentrations. One advantage of this approach is that funding more immediate pollution reductions will fit better into the priorities of developing countries, many of whom find the issue of global pollution to be understandably low on their environmental agendas. The disadvantage is that incremental cost funding for local pollution control confers no obvious benefit on the countries supplying the funds. This contrasts with the GEF case where the world as a whole is the beneficiary from incremental cost funding, e.g. via reduced global warming or the conservation of globally valuable biodiversity.

But further reflection suggests that incremental cost funding of private sector investments has the potential for conferring substantial benefits on bilateral sources of finance. Whereas multilateral financing sources could legitimately be expected to seek a global benefit from such funding, official bilateral sources could easily benefit from localised environmental measures. Whatever the public pronouncements, the motivation for much bilateral aid lies in the market possibilities that are opened up for the bilateral country's own industries. The gain in incrementally funding the private sector, then, would be the investment opportunities for localised pollution control.

Table 2 shows that the environmental control market generally is anticipated to be huge as incomes in the developing world grow and the demands for environmental improvement also grow. What is being suggested here is that some bilateral aid is earmarked for 'topping up' private investment so as to secure localised environmental benefits. This is little more than an extension of existing practice whereby private investors secure 'free rides' from the funding of public infrastructure investments, e.g. roads and telecommunication networks for which they do not pay directly.

There are obvious problems and they are already familiar in GEF financing. Probably the most serious is the potential for game theoretic behaviour by private investors who might understate their willingness to adopt clean technology in the hope that official aid sources will pay for it. In other words, the baseline becomes distorted by strategic behaviour. But the GEF appears to function well in this respect and it is unclear why incremental cost funding for the private sector should meet more serious obstacles.

*Private investors do not have the social and natural environment as their primary concern. Rather, they are there to make an acceptable return to their shareholders. If the world wants those investments to meet some sustainability objective, the world must be prepared to pay the private sector for costs it otherwise has no incentive to meet.*

*Private sector flows of funds need to be modified to meet the demands of sustainable development. The main requirement is that the technologies transferred to developing countries should be clean technologies. The conditions for achieving this are (a) that the relative price of clean technology should fall, and (b) any remaining incremental costs to private investors should be met, at least partly, by re-orienting official bilateral aid. Relative prices of technology can be substantially influenced through the adoption of market-based instruments in the developing world, such as environmental charges, taxes, and tradeable quotas. Bilateral aid with 'green conditionality' also has the attraction of providing a market for donor country industries to meet the rapidly changing market for environmental management and controls.*

Table 2: The Market in Environmental Compliance  
\$ billion

	1990	2000	2010
North America	85	125-217	240
Latin America	2	5	15
W Europe	51-94	78-188	144
E Europe	5-15	9-21	23
Asia Pacific			
China	2	5	20
India	1	2	7
Taiwan	5	30	na
Rest	18-77	26-101	122
Other	6-21	9-34	na
<b>Total</b>	<b>185-302</b>	<b>289-601</b>	<b>571+</b>

Source: Adapted from various sources in Pearce and Steele (1997).

Note: the wide range of estimates arises from the use of different definitions of the environmental compliance market.

*What is required is a twofold extension of the notion of incremental cost. First, it needs to be extended to the private sector; and second, it needs to go beyond global pollutants to embrace local pollutants.*

## FINANCIAL INCENTIVES FOR PRIVATE SECTOR FINANCING

Table 2 suggests that the sheer size of the 'environmental market' will itself lead to substantial investment by the private sector in environmental clean-up, pollution avoidance, and augmentation of natural resource stocks. These environmental investments require little by way of financial incentives for the private sector; they will occur, by and large, through market forces.

But even modest incentives could expand the market more and, above all, alter the conventional non-environmental investment profile into a more sustainable portfolio. Typically, economists have argued that the provision of incentives should occur via the proper

pricing of environmentally 'bad' technologies. But there are arguments in favour of some forms of subsidy to the private sector. These arguments need to be carefully formulated since any subsidy, however well meaning, can quickly become an environmentally damaging subsidy (Runge 1996).

One important principle is to define the environmental or social benefit that any subsidy aims to secure. Whether the resulting payment is called a subsidy or an explicit payment for an environmental service may not matter much initially, although it will be better in the long run if it is renamed a service payment so as to maintain the purpose of the payment in the public perception. It seems clear that European agriculture is gradually changing in this way, away from blanket subsidies based on income support towards payments for particular types of non-intensive and amenity farming. Effectively, taxpayers will be paying for the countryside they want rather than having intensive agriculture and its effects imposed on them because of a production subsidy system.

Another highly targeted subsidy is the provision of accelerated depreciation and other tax allowances for environmental investments. The major advantage of this form of subsidy is that it is 'up front,' giving security of expectations to the private sector, something that is missing in environmental tax proposals where industry remains suspicious that what begins as an environmental tax will quickly become a general revenue raising tax. OECD (1995b) reports on various tax allowance provisions in OECD countries. Austria has capital tax exemptions for environmental investments; Finland and Japan operate accelerated depreciation schemes for environmental investments and France and Japan for energy saving equipment; Canada has accelerated depreciation and capital cost allowances for investments in water and air pollution control; and so on.

*Financial incentives to the private sector to invest in clean technology still have a significant role to play. The private sector has no incentive to adopt clean technology unless it is to comply with local or international regulations, or to create a green image. Beyond these incentives, other incentives are needed. Where an environmental service is provided as an incidental outcome of the provision of some other good, it is legitimate to consider subsidies, or 'service payments,' for those benefits. Subsidies to clean technology via capital allowances and tax breaks are also consistent with the general proposition presented earlier that incremental costs of clean technology might be partly met from public funds.*

*There are arguments in favour of some forms of subsidy to the private sector. One important principle is to define the social or environmental benefit that any subsidy aims to secure.*

## MARKET CREATION

One important reason that environmental investments appear to attract a lower rate of financial return than other investments is that environmental benefits often have no markets. There is little incentive to invest in, say, watershed protection, biodiversity conservation, or the 'fixing' of carbon dioxide if those investments produce only non-monetary benefits, however large they are thought to be. This is why it is important not just to 'demonstrate' the economic importance of the environment through proper cost-benefit and environmental accounting procedures, but to *capture* that importance in the form of cash flows.

Where markets are 'missing' then, it becomes important to create them. Examples of created markets are beginning to multiply, as with the emphasis on intellectual property rights (IPRs) in the Convention on Biodiversity. IPRs effectively create property rights where none previously existed or, at least, where they may have existed but were not enforced. Examples of 'biodiversity prospecting,' whereby pharmaceutical companies pay for genetic material from tropical forests in return for rights of access and extraction are now well known (Pearce 1995). But probably the most exciting example of market creation lies in carbon offsets through joint implementation.

Joint Implementation is enabled under the Framework Convention on Climate Change although, as yet, no formal scheme exists whereby countries engaged in JI can obtain 'credit'. A JI scheme is one where an emitter of carbon dioxide (or, technically, any greenhouse gas) buys emissions reductions or carbon fixation in biomass in another location. While the other location could be anywhere in the same country, most attention has focused on JI deals that involve one country securing a 'credit' for emissions reductions or fixation in another country. If the credits become official, as many argue will happen under the FCCC, particularly in light of the US Government's call in 1996 for a mandatory carbon restriction regime under the FCCC, then it is a small step to making them tradeable, so that a full system of tradeable carbon credits could be established. By and large, it is the private sector that has become involved in the existing trades that have their origin in the USA. In Europe, the Netherlands state electricity company is perhaps the outstanding example of JI.

Ridley (1997) has assembled information on the available trades under the United States JI scheme and the Dutch scheme. The findings suggest some caution about JI schemes since average costs per tonne of carbon avoided by fuel switching schemes are some \$160/tonne carbon, while those for forestry 'fixing' investments are \$26.

*Environmental benefits often have no markets. It is important to capture the economic importance of the environment in the form of cash flows. Where markets are 'missing,' then it becomes important to create them.*



In both cases these costs exceed available estimates of marginal damage from global warming (at around \$20 tC). The costs may also be contrasted with the widely held view that carbon reduction can be secured at close to zero cost or even at negative cost (with so-called 'win-win' investments such as energy conservation). The high cost figures suggest that existing JI schemes are either inefficient or represent points on a learning curve that should decline rapidly as experience of such schemes grows.

The reality is probably a combination of these factors, with the 'inefficiency' reflecting the fact that these are early days for a newly emerging market. As such, no mechanism exists whereby the least cost deals will be identified first. Additionally, transaction costs will be high. Also, until real provision of credits under the FCCC is made, there is not much incentive to seek minimum cost deals: experience of how to make a deal is more important at this stage.

As Zollinger and Dower (1996) note, JI schemes are not at the moment overwhelmingly attractive to the private sector. In the main this is because they do not translate into real credits which can be set against emission targets in the 'donor' country. Nonetheless, a number of private sector companies have secured considerable 'green image' benefits from being involved in the preliminary trades. There are significant learning benefits—learning how to conduct such trades in the event that formal trading does occur under the FCCC—and, for some, there is the desire to encourage these trades as a means of diverting government attention away from carbon taxes.

*Joint Implementation provides an outstanding example of how the private sector can secure financial gains through the creation of a market where none previously existed. The market in this case is in carbon dioxide emission reduction, and its creation has occurred because of the expectation that the Rio Climate Convention will soon permit formal credit to be given for emission reduction by one country in another country. The existing experience suggests that costs are very high, but this may well be as expected given the absence of incentives to seek out the least cost trades. JI stands as an example of wider 'global markets' that need to be established before the private sector can appropriate the economic value of non-market benefits.*

*Probably the most exciting example of market creation lies in carbon offsets through Joint Implementation (JI). A JI situation is one where an emitter of a greenhouse gas buys emissions reductions in another location. These are early days for this newly emerging market; no mechanism exists to identify least cost deals first, and transaction costs are high.*

## VENTURE CAPITAL FUNDS

Venture capital funds provide an attractive medium for bringing together private sector investors, international agencies such as the World Bank, governments, NGOs, and scientific organisations in

partnerships for the financing of environmental conservation. Such funds would have mixes of private sector and official finance. The incentives for private sector involvement lie in the benefits of partnership with governments and international agencies, in the effective underwriting of risks through the partnership, and the spreading of risks across a portfolio of projects. Governments secure the benefits of private sector investment, enabling them to 'offload' some of the burden of financing conservation activities. International organisations such as the World Bank, GEF, IFC and others can pay up front costs to reduce the risks faced by private investors.

Also important is the role that venture capital funds can play in financing small projects which typically fall through the financing net of large investing institutions. In the realm of biodiversity conservation, investments could relate to sustainable timber, non-timber products, genetic material, eco-tourism, and commercial wildlife farms so as to reduce the pressure on wild populations.

A similar context applies to greenhouse gas reduction. The discussion of joint implementation above shows that there are mutually profitable trades to be obtained whereby carbon emitters pay for emission reductions elsewhere. The gain to the emitter is lower costs through emission reduction, provided the reductions are eventually translated into formal credits, and the gain to the 'host' country is that it too may secure some of the formal credits whilst also securing access to state of the art technology. In addition, host countries will benefit from the fact that, since many other pollutants are produced jointly with carbon dioxide, carbon reduction should mean reductions in those pollutants as well. Estimating the potential size of a carbon offset market is hazardous, but World Bank figures suggest anything from \$10 billion to \$20 billion by 2020. The Bank has already completed joint deals with Norway for the reduction of carbon dioxide emissions in Mexico and Poland and proposes a Carbon Investment Fund to expand into further projects.

*Venture capital funds provide an attractive medium for bringing together private sector investors, international agencies, governments, NGOs and scientific organisations in partnerships. These funds play an important role in financing small projects which typically fall through the financing net of large investing institutions.*

## CONCLUSIONS

It seems fair to say that there is enormous scope for adopting policies on sustainable development that do not require new and additional finance. The removal or reduction of economic distortions provides one example of 'unfunded' progress on sustainability. The creation of the right context for private sector risk taking provides an example of action that will induce further private investment without itself requiring new funds over and above those already allocated to structural adjustment programmes. But it is also clear that even these major policies will need to be supplemented by a vigorous policy of seeking further finance.

The political context in the OECD countries is such that, however unfortunate it is, further significant official aid is unlikely to be forthcoming. But even if official funding flows were to increase, the very large rise in the share of private financing of development (60% of total net resource flows - see Table 1) has to be scrutinized to determine if it is effective in securing sustainability objectives. Much of it almost certainly meets sustainability criteria, although there is no known classification of which flows are environmentally sound and which are environmentally damaging. This leaves open the issue of what further incentives need to be provided for the private sector to invest in an environmentally sensitive manner.

The suggestions in this paper have been threefold:

- (a) boost opportunities for investment in environmental assets through 'market creation'. The aim here is to convert the non-market benefits of environmental conservation into cash flows, thus acknowledging that, while the private sector has made major strides in social and environmental responsibility, private investors have as their first responsibility the interests of their shareholders;
- (b) change the relative prices of clean and dirty technology so that the former is far more attractive. The use of market-based instruments to implement the polluter pays principle in the developing world will help to secure this shift. But even if the prices of polluting technologies are raised only in the developed world, this will have benefits for developing countries through the fact that much investment adopts the best available technology anyway, regardless of host country environmental standards; and
- (c) look for financing structures that help fund the incremental cost of clean technology where it remains more expensive than conventional technology. This is an extension of prevailing practice whereby subsidies, grants, and tax allowances are given to technology exporters if they adopt clean technology. Added to this, venture capital funds and other co-financing deals can reduce private sector risks substantially whilst also 'reaching down' to the small projects that major institutions often find so difficult to fund.

The potential for involving the private sector is large. It will not happen through moral appeal or threats. It has to involve incentive systems that are mutually advantageous to all stakeholders in sustainable development.

*There is enormous scope for adopting policies on sustainable development that do not require new and additional finance. The creation of the right context for private sector risk taking provides an example of action that will induce further private investment without requiring new funds. But these adjustment programmes will need to be supplemented with a vigorous policy of seeking further finance.*

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## DAVID PEARCE

David Pearce is Associate Director of the Centre for Social and Economic Research on the Global Environment at University College, London and the University of East Anglia, United Kingdom. He is also Professor of Environmental Economics at University College, London. As one of the foremost thinkers and writers in environmental economics today, Mr. Pearce serves as an adviser to many governments and international organizations, including the World Bank, UNEP, and UNDP.

## Steering Business Toward Sustainability: New Strategic Choices Through the Zero Emissions Approach to Biomass Production

Gunter Pauli  
United Nations University  
Tokyo, Japan

### ABSTRACT

This paper argues that if the management of renewable resources, in particular plantations, were to opt for an innovative approach to the full use of all components of the biomass generated by crops and trees, it would convert the producers of biomass into an economic power house of the 21st century, comparable to the petroleum industry of the 20th century. It would become an engine for growth, a generator of jobs and an example of sustainability. It is an ideal model of how to steer companies toward sustainability.

Business and society must respond to the needs of the people for water, food, health care, shelter, energy and jobs. The population explosion is adding stress to a system which is not able to provide even the most basic services to some 800 million people in the world. And with an additional 90 million inhabitants per year, the challenge is tremendous. Asia alone is responsible for some 54 million extra consumers on the globe this year. In order to respond to this increasing number of citizens, the globe needs to produce an additional 28 million tons of grain annually, or 78,000 tons per day.

Scientists and agronomists succeeded in achieving the First Green Revolution. Thanks to irrigation, the application of fertilizers, pesticides and the selection of high performance seeds, productivity has gone up dramatically. The irrigated land increased 2.5 fold between 1950 and 1990, expanding from 94 to 248 million hectares, two thirds of which are found in Asia. The world fertilizer consumption increased from 14 million tons in 1950 to a staggering 146 million tons in 1990. World harvest of grain increased over 40 years from 631 million tons to 1,780 million tons. The world production of beef nearly tripled from 24 to 62 million tons and the world's fish catch increased more than fourfold from 19 to 85 million tons. The yield per hectare demonstrates the results over the forty year period with yields going from 1.06 tons per hectare to 2.52 tons.

But scientists agree that we cannot expect another three-fold increase in the productivity of land. This fact will add stress to the system, greatly exacerbated by the 400 million middle class consumers who are emerging in Asia. A middle class consumer has the purchasing power to pay for a beer a day, to buy a newspaper for a dollar a day, the money to buy chicken twice per week, and to pay for an egg for breakfast. These are the consumers who are moving

*Scientists agree that we cannot expect another three-fold increase in the productivity of land; consumers are moving up the food chain, which has a major impact on food security in the world.*

up the food chain, whereas Indians only consume one quarter of the amount of grain and wheat that Americans consume, and only consume 30 eggs per year and 3 kilos of meat, which is very low compared to the American average of 174 eggs per annum and 123 kilos of meat. Moving up the food chain has a major impact on the world's food security. The consumption of eggs is increasing 15 percent per annum in India, reaching 300 million eggs in 1995, projected to double to 600 million in the year 2000, and then 1.2 billion in 2005.

Plantations could play a central role in this emerging economy. Plantations could evolve from cash crop producers to major generators of wealth, trade and jobs in the world economy. The importance of plantations is increasing since their impact on the global environment reaches far beyond the use of water, fertilizers and pesticides. Plantations have the opportunity not only to position themselves as key carbon sinks and centers for the absorption of carbon dioxide, but also to become engines of sustainable economic development.

The plantation represents one of the best potential platforms of sustainable growth and socially equitable economic expansion. Based on an innovative form of management, which we label "zero emissions," it is feasible to merge several agendas and convert the plantation industries into the forefront of the global economy, rivaling the petrochemical industry in magnitude, technology, and political influence.

*Plantations potentially play a central role in this emerging economy: they have the opportunity to position themselves as key carbon sinks and as engines of sustainable economic development.*

Table 1 Traditional plantation vs. 21st century management called Zero Emissions

Traditional	Zero Emissions
Linear approach	Systems approach
Core business	Clusters of industries
Yield of one crop	Value added of the total biomass
Sideline of world economy	Forefront of the world economy

## CORE BUSINESS STRATEGIES: PETROLEUM VERSUS NATURAL PRODUCTS

Plantations are still a prime example of “core businesses.” After all, when you plant pineapples, you are in the pineapple business. When you harvest sisal for its fibers, you are in the fiber business. When you extract oil from palm fruit bunches or from olives, you are in the vegetable oil business. But this approach does not permit the valuation of the total potential of the plantations.

We often wonder how products from a nonrenewable raw material like petroleum can so easily out-compete substitute natural competitors from a renewable source. The reason is simple: if we were to hydrolyze (break down) all the macromolecules of the plantation in the same way as petrochemistry breaks petroleum into hundreds, even thousands of products, then the renewable resources of the biomass offered by the plantations would be in a position to eliminate synthetic materials within a decade. Unfortunately, plantations remain very much as core business operations, and petrochemicals thrive as a result.

The new view of plantations requires a shift from a linear approach, searching for one product, to a systems approach of recovering all components as value added. Instead of focusing on the core business, plantations could cluster several industries together (see Table 1). The yield of one component of the crop would be subordinated to the total value added generated by the total biomass. If this strategy is pursued, then the plantations will move from the sideline of the world economy to the center stage.

*If we were to hydrolyze all the macromolecules of the plantations in the same way as petrochemistry cracks petroleum into thousands of products, the renewable resources of the biomass would be in a position to eliminate synthetic materials within a decade.*

## RESEARCH AND DEVELOPMENT OF TODAY

Research and development for plantation industries has focused on how to increase yield: how more vegetable oil can be pressed from coconuts, olives and oil palm with a given acreage; how more coffee beans can be processed; or how more citrus fruit can be harvested using less water. This clear focus on yields and productivity of the core product stimulated the responsible use of water, fertilizers, pesticides and herbicides. Careful seed selection and cloning of pest resistant varieties, sometimes the product of genetic engineering, certainly pushed the results beyond imagination.

While the success of this scientific approach, spearheaded by prominent institutions like PORIM in Malaysia, certainly cannot be debated, the time may have come to introduce a new focus. Indeed, scientists agree that while yields can be expected to go up even further, no one is expecting a continuation of the same dramatic improvement as has been witnessed during the Green Revolution.

There has been a call for a second green revolution, but what type would that be?

It seems there are increasing problems with pests which have become resistant to some of the previously effective chemical controlling agents. La broca, the pest affecting coffee plantations in Latin America, is gaining ground. Even when new pesticides are introduced and stringent controls are implemented, more advances in protection of the existing plantation have to be achieved. Coffee is not the only crop affected. Banana plantations are infested and new varieties have been cloned rapidly to secure the survival of the industry; the palm and coconut tree, attacked by fungi from within, falls over when it is too late to do anything about it. There are few plantations indeed which are free of pests. Biologists will confirm that anytime a monoculture takes over a patch of land, pests will have a chance to invade and dominate.

As a result, the focus of research seems increasingly directed toward preserving what has been achieved. While the further increase of yields is not out of sight, there is another factor compounding the search for ever higher yields: price. Since many commodity prices have spiraled downward over the past decade, world prices have not motivated researchers to imagine a new tripling of output. On the contrary, conservation has often become the name of the game.

*Research and development may need a new focus. There has been a call for a second green revolution, but what type would that be?*

Table 2 Environmental Management of Plantations in 60s, 80s, and the 21st century

1960s	1980	2000
practice	substituted by	in addition to all previous
pesticides spraying undergrowth	biological pest control plant nitrogen fixing cover crops	reuse of all biomass in clusters strategic planning of carbon sink
fertilizers monocultures	waste as soil enrichment seed bank expansion	establish tradable carbon rights productivity thru biomass reuse in other industries
selection for high yield	selection for pest resistant	cloning of biochemically rich varieties
clean clearing and burn	zero burning	search for value added



### BIODIVERSITY, DDT, SLASH AND BURN

Plantations are certainly not known for their contribution to biodiversity; on the contrary, too many varieties have been lost in this drive toward higher yields. Only now are scientists sometimes desperately searching for alternate varieties which may offer the only security against infestations of mildew, fungi, and insects which have developed resistance or immunity against the harshest forms of chemical control. While monocultures are the norm, plantations around the globe are searching for new varieties, even studying the DNA of long lost plants and fruits in the tombs of ancient civilizations.

Plantations have evolved from centers of consumption of DDT, the widely banned chemical substance unmasked by Rachel Carson in the early 1960's in her epoch-making book *The Silent Spring*, to test beds for biological control. While chemical spraying was the norm, now it has become increasingly the defense of last resort. While spraying noxious undergrowth used to be the tradition, now plantations conserve soil by planting species that will avoid the extraction of nutrients from the soil, while the growth cycle of these undergrowths will even plow nitrogen back into the fertile ground, enhancing the plantation and reducing the need for chemical fertilizers. Table 2 reviews the strategies of the past, the concepts which are gaining ground now and the progress that needs to be achieved in the future in order to achieve a truly competitive industry.

Plantations have been criticized for their clean clearing, involving burning in order to prepare the fields for planting or replanting. Now, most responsible plantation companies owning large acreage across the globe are self-imposing the "no-burn option," meaning that none of the biomass waste will be incinerated. This no burn option is one among many relatively innovative approaches introduced by Malaysian palm oil plantations such as Golden Hope Plantations Berhad or the pineapple plantation Gunung Sewu (Great Giant Pineapple Plantation); it is not yet mainstream. It has been suspected that plantations are a major contributor to global warming due to the repeated release of carbon dioxide into the atmosphere through the practice of burning. The alternative reuse of this biomass as a fertilizer or a soil amendment is a first step, although it is not enough. If a process can be identified that permits the generation of value added, then it will be embraced by all plantations around the world in no time. This needs some solid argumentation and scientific proof and has been the main thrust of the Zero Emissions Research Initiative.

*Plantations have evolved from centers of consumption of DDT to test beds for biological control. Spraying is increasingly the defense of last resort. Undergrowths plow nitrogen back into the fertile ground, enhancing the plantation and reducing the need for chemical fertilizers.*

## HOW TO STEER PLANTATIONS TOWARD SUSTAINABILITY?

The key question we have to ask ourselves is: How can we stimulate plantations to embark on a real sustainable strategy that goes beyond biological pest control, safeguarding of biodiversity, and non-incineration of biomass waste? These are solutions and practices already generated in the seventies and eighties. The United Nations Conference on Environment and Development took place in Rio de Janeiro five years ago and the results will be subject to a review during a special session of the UN General Assembly from June 23-26, 1997. The time has come for plantations to go beyond the ideas of the past. We must ensure that plantations evolve into examples of environmentally sustainable development. We must envision a strategy that enables them to become examples of resource productivity. How can we ensure that this approach is embraced and remains successful? The main objective of this paper is to formulate responses to these two fundamental questions: (1) Can all biomass be reused? (2) If so, will the plantations move to the center stage of the economy and offer a prime example of how to achieve an increase in resource productivity?

If we can demonstrate that innovations in plantation management will not only lead to a sustainable exploitation of renewable resources, but also yield multiple revenue streams, then no investor or owner would object. When it is a matter of competitiveness, a question of value added, and a cash flow with good returns on investment, then all plantations will be prepared to join. This requires innovation in management and technology; consequently, a new management concept is needed. Governments can regulate, NGOs can agitate, but only business can innovate. And in order to move plantations toward sustainability, numerous innovations are needed.

## THE ROLE OF GOVERNMENT

Many would stress the role of government in steering business toward sustainability. This is an important issue. Excesses need to be restrained. Basic needs for food, water, health care, and shelter must be met. But government should refrain from going beyond these main tasks. This is not a plea for laissez-faire policies, with a blind belief in the invisible hand of Adam Smith. However, it is appropriate to point out that the introduction of quality management, for example, and the application of the ISO 9000 standard was never imposed by law nor demanded by NGOs. Businesses, including plantations, know all too well that if they do not embark on a quality

program, they will lose their competitive position on the market. It was competition that drove industries towards new management practices where quality stands central (Table 3). It is competition that will drive plantations to the Zero Emissions management concept.

#### AN EMERGING MANAGEMENT STYLE: ZERO EMISSIONS

The concept of “zero emissions” is a new management instrument which emerged only a few years ago in the field of industrial ecology (Table 3). It is comparable to the total quality management (TQM) concept without which no business can prevail today. Total quality is equated with zero defects. Zero emissions can be compared with the just-in-time, or no inventory, concept which clusters suppliers around major assemblers like the car industry. The concept of zero emissions is the continuation of the concept of total customer satisfaction, where no executive will rest until all customers call for repeat business. It is a “zero defection” target. Just as no manager can tolerate one fatal accident (zero accident or total safety) in his company, the objective of business must be zero emissions, or nothing wasted. It is only when all materials are fully used that processing industries reach their highest potential.

Zero emissions basically means that “nothing will be lost, all waste will be used as value added.” Residues can either be reused within activities of the industry itself, or as a value added input for other industries. It is a systems approach, and differs as such from the linear approach where only one product is targeted based on the core business strategy.

This new management concept of Zero Emissions has the potential to reposition plantation industries in the world economy. The application of the ZERI methodology, which is described in the appendix, could very well catapult the plantations to the forefront of the economy and global environmental politics. This methodology searches for cleaner production methodologies first, then it identifies the value addition that can be generated on the basis of the waste. It will describe the clusters of industries that could emerge,

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Table 3 Managing Zeros

Management Concept	Target
Total Quality Management	Zero Defects
Just in Time	Zero Inventory
Total Customer Satisfaction	Zero Defections
Health and Safety in the Company	Zero Accidents
Total Productivity of Materials	Zero Emissions

single out the technologies needed, and conclude which government policies are necessary to support this approach. Table 4 highlights the results of such a methodological approach to palm oil plantations.

While single crops and numerous by-products of limited value are standard in business, the time has come to imagine plantations at the core of a cluster of industries which generate an economic value previously unimaginable. This really is a continuation of striving for higher levels of productivity.

### PRODUCTIVITY OF THE PLANTATION

As discussed above, plantations like any other business need to focus on increased productivity. One never reaches the limit; there is always the chance to go beyond the current level. As mentioned above yields have improved tremendously and scientists agree that further dramatic increases are not expected. The first green revolution succeeded and reached its limits. While incremental improvements are certainly around the corner, the plantation industry can envision a doubling or tripling of revenues only when it targets the full use of the biomass it is producing.

Palm oil plantations in Indonesia, Malaysia, and Brazil generate an estimated 200 million tons of biomass per annum. Sisal plantations in Tanzania alone generate over 10 million tons of biomass. These amounts are comparable to the volumes processed by the petrochemical industries. The core question that needs to be posed is: How much ends up in the commercial trade? A minor fraction, indeed. There are few plantations which are capable of putting a commercial value on more than 10 percent of the biomass that they generate each year. Most of the plantations commercialize less than 10 percent of the green mass, trunks and fruits generated. The palm oil represents approximately 8 percent of the biomass of the plantation over its life time, the sisal fiber is just about 2 percent per harvest, sugar is some 15 percent of the cane. By all standards, this is not a very productive operation; there is much room for improvement.

The efficiency of the tropics in generating biomass is unique and well documented. Photosynthesis in the equatorial climate is more effective than under the Arctic circle. But when the biomass is so massive on the one hand, and so under valued on the other, then we have to question what can be done. It is immediately obvious that where the main crop is concerned, little can be done. Coffee farmers in Colombia cannot double their yields with new varieties. The sugar plantations in el Valle del Cauca cannot harvest more than their current international record.

*The ZERI methodology could very well catapult plantations to the forefront of the global political economy. This methodology searches for cleaner production methods first, then identifies the value added that can be generated from the waste. It will describe clusters of industries that could emerge, single out the technologies needed, and conclude which government policies are necessary to support this approach.*

After decades of requesting the earth to produce more of the same, the time has come to do more with what the earth currently produces. This is probably the most important step that plantations can take towards sustainability and environmental stewardship. It is a creative process that must go beyond the current “best practice” (Table 4).

Table 4: Existing best practice for waste and potential new use

Output Type	Existing Best Practice	New usages under research
Crude Palm Oil	raw material for palm oil refining	palm diesel production
Trunk	Soil conditioner (zero burning technique)	wood products (fiberboard, particleboard, furniture), pulp/paper, animal feed, glucose, cellulose substrate, fuel, palm heart, activated carbon, polypropylene filler
Fronds	Soil Conditioner	Vitamin E extraction, fiberboard, particleboard, pulp/paper/paperboard
Pericarp Fiber	Fuel for mill	fiberboard, mushroom growing substrate, pulp/paper, roofing tiles/cement aggregate, sorption for heavy metal cations
EFB	Mulch for soil application	fiberboard, substrate for growing mushrooms, beta carotene production, solid fuel
Shells	Fuel for mill	Activated charcoal, cement aggregate, potting medium
sterilizer condensate	(see Total POME)	cellulose, single cell protein substrate
sludge	(see Total POME)	feed supplement
hydrocyclone water	(see Total POME)	(see Total POME)
Total POME	Closed tank or lagoon digestion to produce anaerobic slurry for fertilizer use, and biogas for heat/power generation	ethanol/amino acid production
Washings	(see POME)	(see Total POME)
Boiler Ash	Fertilizer, detergent, land fill	-
Kernel	kernel meal, animal feed	-
crude palm kernel oil	raw material for palm kernel oil refining	-

Sources: Teoh Cheng Hai, 1993; Hoi W.K., 1993; Doelle, 1996; Oi et al, 1993; Birtigh et al, 1995; Kamishima et al, 1994; Tay J-H, 1990; Okhuoya et al, 1993; Kume et al, 1993; Zaini et al, 1994; Pauli 1996.

## FROM DOWNCYCLING OVER RECYCLING TO GENERATING VALUE ADDED

Plantations are not discarding all waste materials from fields or processing units. Many use the waste from fruits as a soil amendment or fertilizer. But how many by-products generate additional value that in general outstrips the cost of production and disposal? Very few indeed. How much do coconut plantations in Sri Lanka or Cote d'Ivoire receive for the fiber of the fruit which is used to wrap drainage pipes in Europe? How much do sugar plantations in South Africa derive from the sales of bagasse to cattle farmers? What is the caloric value of the bamboo plantation waste in Indonesia? How much do citrus farmers get for the pits?

While we all underwrite initiatives and support the desire to reuse wastes as by-products, the question is how much value added is and can be generated? All too often, the value is minimal and resembles more a downcycling, getting rid of waste at a price cheaper than the straightforward disposal, or a cheap recycling under the form of a fertilizer, euphemistically called a soil amendment. Only if the plantations will generate considerably more money from the additional harvesting and processing will these materials be used.

The mere volumes of biomass with which plantations have to deal are staggering. A palm oil plantation generates on average 25 tons of biomass waste per year, so that a 40,000 ha plantation, which is nothing unusual in Kalimantan, Indonesia, already has to handle 1 million tons on its own. This means that any valuable component that can be identified represents a major additional industry.

The first requirement is to think beyond the core business. The second requirement is to identify the biochemical components which are outside the mainstream of the plantation business, but which could be inputs into a clear stand-alone industry, with a unique competitive position, if and when extracted efficiently. A concrete case is the isolation of furfural from the African oil palm. The Latvian State Institute of Wood Chemistry demonstrated furfural processing from biomass of the oil palm with its pilot unit in Riga. The Institute has designed a test unit for immediate installation.

Not many oil palm planters have even heard of furfural, so no one can blame them for their lack of strategy. Furfural is a natural anti-enzymatic and efficient bactericide used, for example, in the paint industry as a solvent. It commands a higher price on the market than palm oil (US\$1,350 per ton). When biochemists found that the conversion of hemicellulose from the trunk of the tree into furfural reached 17% at laboratory scale, it is no surprise that this

*Zero emissions is the continuation of the concept of total customer satisfaction. It is only when all materials are fully used that processing industries reach their highest potential.*

high concentration calls for an investment strategy. Then a palm oil plantation is not only in the palm oil business, it is also in the furfural business. Of course, if all plantations were to engage in this extraction, prices would drop, perhaps to half or even one-third of the present world market price. Today, furfural is available in both its synthetic and its renewable form. As the natural variety becomes cheaper than the petrochemical one, it would take over the market and plantations' revenues would increase.

The palm oil plantation could be on the verge of converting itself into an industry with many by-products like the petroleum industry. The petrochemical industry does not lose one molecule. The value of this non-renewable resource is considered so high at \$23 per barrel that everything is broken down into useful chains of products. Why do plantations not engage in a similar approach? After all, the variety of components of a plantation can always be reduced to a few core products, namely cellulose, hemicellulose and lignin and a wide variety of specialty chemicals such as proteins, lipids, waxes, etc.

The biochemical study of the sisal plant, a crop that is rapidly losing popularity due to the advent of synthetic ropes at a cheaper price, confirmed that the bowel of the sisal plant can serve as an excellent basis for the fermentation of citric and lactic acid. The price of citric acid is 10 times higher than the price obtained for sisal fibers. The citric acid production process is a fermentation system. The tropical climate in Africa permits a solid state fermentation, eliminating the need for expensive steam which is widely used in Europe and America. Just imagine that the sisal fiber represents 2% of the biomass and that 10% of the bowel can be converted into citric acid at ten times the value. It will be possible to regain the competitive position for sisal fibers when additional revenue is generated from the production of the food additives.

These are just two concrete examples of the value that can be extracted if one is willing to do the homework. Consider the iodine from seaweed plantations, the beta carotene from the avocado, the vitamin E and anti-oxidants from coconuts, palm oil, and the pits of citrus fruits. There is so much that can be extracted and we have only seen the beginning. Multidisciplinary research that goes beyond the boundaries of one sector will undoubtedly find numerous additional products for extraction and commercialization. The comparison will, for example, indicate that coconuts are much richer in Vitamin E than palm oil, while palm oil is richer in betacarotene. The potential is vast.

*The palm oil industry could be on the verge of converting itself into an industry with many by-products like the petroleum industry. The variety of components from a plantation can always be reduced to a few core products, namely cellulose, hemicellulose, and lignin, and a wide variety of specialty chemicals.*

## FIBERS

One component of plantations deserves special attention: the fibers or lignocellulose. The massive capacity of plantations to generate cellulose deserves special attention. Let us take a global perspective. Not one environmental program in the world has been as successful as the recycling of paper. All countries around the world are dedicated to the recovery of used paper. The reason is simple. People are aware that trees are logged in order to supply cellulose from which pulp and then paper is made. The Japanese recover over 50% of all paper, while American states even legislate the minimum content of recycled fibers in newsprint. Demand for cellulose for the production of paper and packaging materials is increasing. It is no secret that the increase in literacy and the improvement in living standards stimulates the demand for paper. The arrival of 400 million middle class consumers in Asia is a major challenge for the world. These middle class consumers have one dollar a day available to buy a newspaper.

The need for fibers goes beyond pulp, paper, and packaging. Cellulose is used in construction materials, such as cement additive, rendering the cement board more resistant in tropical climates. One cement board factory will need a 2,000 ha bamboo plantation in order to have access to the right blend of green mass to strengthen its cement.

Somehow, the plantations around the world seem to neglect, or we neglect, that they represent the largest source of cellulose in the world. Any plantation, of whatever type, could be considered a cellulose factory. Most of them are located in the most productive areas, offering a quality that competes perfectly with the cellulose varieties found in Scandinavia or North America.

*Demand for cellulose for the production of paper and packaging materials is increasing. Somehow, the plantations around the world seem to neglect, or we neglect, that they represent the largest source of cellulose in the world.*

## PLANTATIONS AS CARBON SINKS

As major cellulose producers, plantations can also be classified as one of the most efficient carbon sinks, capturing carbon from the air through photosynthesis and returning oxygen to the atmosphere. This basic function of the forests is indeed also assumed by plantations, and the job is performed in a very controllable fashion. The disposal of cellulose from plantations has been a major problem in the past. Indeed, most of it was either plowed back into the soil or even incinerated, contributing to carbon emissions.

Therefore, it does not make much sense to engage in the planting and harvesting of trees like spruce and Douglas fir which need at least 20 years to be harvested and are shipped to the centers of new



cellulose consumption, which are rapidly shifting to South East Asia and Latin America, when the plantations there could easily respond to the demand. The richest concentrations in cellulose are found in bamboo, sugar cane, rattan, palm oil, banana, and coconut trees, the quality of which could match the traditional sources of fiber extracted from hard or softwoods.

Why is the extraction of cellulose from the plantation neglected? When Indonesia declared that it plans the construction of 30 new pulp mills by the year 2010 with a capacity of 11.1 million tons, it unfortunately did not indicate its sources of cellulose. At a time when the harvesting of primary forests is prohibited and the replanting of the cleared land will take years, the plantations offer the logical answer. If Indonesia were to engage in special forestry projects, then we are missing a unique opportunity to valorize the plantations' biomass. Indeed, the booming plantations on some of the 13,000 islands of Indonesia could become the key supplier of cellulose in a variety of strengths and lengths that meet even the most demanding pulp buyers in the world. The full 11 million tons could be supplied by the 2.2 million ha of palm oil plantations.

The implementation of this strategy requires multidisciplinary research in which forestry experts cannot expect to take a lead. They have an existing business to defend. It is up to the plantation industry to take the lead and demonstrate its feasibility, both technically and economically, in order to move forward. And it is also up to the plantation industry to identify the new technologies that are needed to facilitate their task and their challenge.

This is an environmental and economic opportunity of great significance. Moreover, it is the birth of a new industry, complementary to the plantations' original business, oil from the palm or the coconut, or sugar from the cane. This use of cellulose represents a major additional demand for biomass which is not exploited today. And the value generated is much higher than the economic importance of the soil enricher which is hard to find in the bottom line of the plantation. Even at the rock bottom price of US\$ 400/ton, it is good for an extra annual revenue between US\$1,100 and 1,700 per ha.

## THE NEED TO FIX CARBON

This is quite a breakthrough, since such a reuse of the fibers not only generates additional business, it also represents the creation of a massive carbon sink. The world is in urgent need of carbon sinks. We are creating an excess of CO<sub>2</sub> around the globe and as a result, scientists fear that global warming is imminent. The world is not

sitting still. Massive research efforts are being undertaken not the least by the Japanese who wish to find the best technologies to quickly reverse the danger of global warming due to the excessive exhaust of carbon dioxide. The Research Institute for Innovative Technologies for the Earth (RITE), located in Japan, has some US\$80 million in research funds per year.

If just a fraction of that budget could be reserved for studying the carbon sink capacity of plantations through the commercial reuse of cellulose, it would not only capture the carbon in endurable products, it would also offer the opportunity to create new jobs, expand trade, and enhance investments. What more can you wish for than the merging of all these agendas? The reuse of most of the plantations' biomass will result in the long term capture of carbon dioxide, and that is a priority for humanity. There is probably no sector in the world economy capable of contributing to this like the plantations around the globe.

#### CERTIFICATION OF CARBON SINKS

Plantations could consider quantifying through certified organizations how much carbon dioxide they are effectively fixing, and how to increase it. Why? In the first place, this background data could spur international interest in the role of plantations and secure funding for research. Longer term it could even represent a key source of revenues. Over time, there is likely to be established a system of tradable rights for carbon dioxide emissions. That means that each company will have a specific limited number of emission rights and when they exceed these rights, they must either reduce them, which may technically not be feasible, or they must buy the rights from those who either did not use them, or who are massively capturing carbon dioxide from the air.

The question, "In which business are you?" has been posed a few times in this article. And while plantations may be willing to consider entry into new biochemical components which were not valorized before, the entry into tradable carbon dioxide rights may seem very farfetched today, but certainly it is not theory anymore. The Dutch government already requires industries to compensate for their carbon dioxide emissions by initiatives outside the country. It is only a matter of time before this becomes a global practice. Again, Japan confirms that this is on the priority list for moving toward global environmental stewardship. When the Japanese Energy Institute studied in detail the possibilities for establishing such a system, the core element that was missing was the producers of the sinks.

Plantations: In which business are you?

*If a research budget could be reserved for studying the carbon sink capacity of plantations through the commercial reuse of cellulose, it would also offer the opportunity to create new jobs, expand trade, and enhance investments.*

Specialized corporations like SGS, based in Switzerland, have established a world business in certification of products for export and the certification of quality. Now, the next new line of products they are likely to certify is tradable carbon dioxide rights. After all, who has the independence and the authority to establish how much an industry has wasted in terms of CO<sub>2</sub> and how much it should purchase additionally from elsewhere?

### EXTENDED LIFE CYCLE ANALYSIS

The third challenge of the plantation industries is to introduce to its clients a full life cycle analysis (LCA). At present LCA is gaining ground in industrialized countries, permitting better insights into the impact of products on the environment. A thorough LCA takes years to establish and often the data to permit a full view are missing. While every effort has to be made to determine the life cycle of a product from cradle to grave, here we are arguing for a new extended form that can be introduced in the next few years. No one else is better placed than plantations to take the lead.

Let us take the case of coconut from plantations in the Philippines. As Japanese consumers become increasingly aware that detergents are a major uncontrollable cause of water pollution, they may wish to substitute the very slowly degradable chemical tensides with fast degrading vegetable-based water surface tension reducers. This is certainly to be applauded. The most popular vegetable surfactants are fatty acids derived from coconut oil, palm kernel oil and especially the lauric ether sulfate. An extended LCA of a coconut based detergent looks straightforward, but here we propose a different assessment.

While the rivers in Japan or Europe may be cleaner thanks to the use of these environmentally less detrimental raw materials of vegetable origin, we have to admit that there is a major flaw in the logic. Indeed, the fatty acids from the coconut oil represent only 4% of the biomass generated annually from the plantation. Nearly all the rest is being discarded. How responsible is this? Considering that the petroleum-based molecules were part of a long chain, where nothing got lost in the process, which is environmentally more responsible: using nearly 100% of a non-renewable source, or using only 4% of a renewable source?

It would be in the interest of the Philippine coconut plantation industry to remind the Japanese that if they wish to have cleaner rivers, they might consider an extended life cycle analysis revealing the impacts this environmentally sound product development could have in their industrialized society. This line of product development could benefit the planters more than just the sale of a com-

*Life cycle analysis (LCA) is gaining ground in industrialized countries. While every effort has to be made to determine the life cycle of a product from cradle to grave, here we are arguing for a new extended form that can be introduced in the next few years.*

modity like fatty acids. The coconut tree is not just the provider of oils and acids, it is also the supplier of cellulose, which represents one third of its biomass, more than anything else. It is a source of biochemicals and clean fuels (like lignin) which can be used in an efficient manner. The small fibers can be recovered in the form of particle board. The coconut is rich in Vitamin E. So, instead of having just one business, we see the emergence of five industries, all clustered around the coconut tree and the desire of the Japanese and Europeans to clean up their rivers.

This extended life cycle analysis potentially offers answers to many challenges. It is more than an environmental strategy: it is an investment platform, a trade generator, a job machine. Then the LCA becomes a most attractive tool for sustainable development, instead of being today a mere tool for environmental performance. If years of research are needed, it had better be useful for more than just compiling statistics on the production and disposal of products.

The Zero Emissions Research Initiative has already undertaken biochemical assessments of the biomass from palm oil in Malaysia and Indonesia, sisal in Tanzania, sugar cane plantation industries in Brazil, and pineapple plantations in Indonesia—all with success. Other plantations are preparing for the application of this analysis, like the olive oil plantations in Italy. While these are the first steps indeed, the methodology is expanding rapidly, since all partners in the exercise realize that this offers a unique chance to merge agendas: preservation of the environment, increased productivity of the biomass, creation of jobs, attraction of additional investments, expansion of trade and the pursuance of innovative research and development programs. Not the least, it decreases the risk run by any single-product business.

*A clustering of industries around the biomass factory, i.e., the plantation, moves this business from a single-product enterprise, which is subject to volatile changes in the world commodity prices, to a portfolio of businesses and derivatives which are part of different business cycles, and therefore, guarantee better stability in revenues.*

## PORTFOLIO APPROACH

This clustering of industries around the biomass factory, i.e. the plantation, moves this business from a single product enterprise, which is subject to volatile changes in the world commodity prices, to a portfolio of products and derivatives which are part of different business cycles and therefore guarantee better stability in revenues. Throughout history we have too often seen that the overproduction of one crop risks wiping out nearly all plantations, or that a synthetic substitute, like synthetic rubber, eliminates fortunes in a few years' time, as the city of Manaus in Brazil stands to witness for generations to come.

A portfolio approach, based on biomass generated in the commercial exploitation of one species, will offer in addition to the

core crop a set of other products which could challenge the petroleum derivatives in price and volume.

## CONCLUSIONS

The design of the environmentally sustainable plantation of the 21st century is more than a strategy to preserve the environment. It is a challenge to make plantations more competitive among each other and against substitute materials of synthetic origin. Increased competitiveness can be achieved by continuing to focus on higher levels of productivity. Now that yields of crops have reached their limit, plantations will undertake analyses to unveil the opportunities in derivatives which can be extracted from the massive amounts of biomass which remain without value added. This is a fertile basis for new investments, for job creation, for trade and for technological cooperation.

It requires a multidisciplinary approach. It can only succeed with cooperation across business sectors. Fibers from the plantation are reused in the pulp industry, lignin as a binding agent, hemicellulose in the food industry, just to name the most important ones. We know that the Japanese government is prepared to cooperate in such an analysis, and industry will be prepared to convert the findings into new industrial development schemes. The Zero Emissions concept has found fertile ground, and if demand were presented by the major planters around the world, backed by their governments, then several initiatives could be started in the short term.

After a decade of downsizing, agro-industries can imagine a strategy for upsizing. Whereas downsizing targets producing more with fewer people, upsizing demonstrates that one can produce more with more people.

## APPENDIX: ZERI METHODOLOGY

The introduction of a new concept of productivity, focusing on the complete reuse of the biomass and the advent of the use of biomass as a tool for trade and development, is a complex issue. Addressing complex issues is not easy. Available analytical methods are not well equipped to take numerous different components into account. Worse, business executives rarely have all the expertise under one roof, which would permit immediate access to the in-house process engineering knowledge that is needed to demonstrate the viability of reusing other compounds commercially. As mentioned, business

has been pressured to focus on its core business strategy, reducing its scope to those activities at which it is best. These elements have led to the study of the problems of the industry within the industry. A survey of the opportunities outside the industry has not been easily initiated. Just as waste exchanges are emerging in different parts of the world, the clustering of industries based on waste material cycles is emerging as a strategy for economic development and enhanced competitiveness of industries.

The ZERI (Zero Emissions Research Initiative) of the United Nations University has worked out a methodology which facilitates the envisioning of solutions to these complex issues. This methodology is based on two assessments: an input-output table, and an output-input table. The first part is based on the ISO 14000, or just good housekeeping procedures, that could lead to the certification that the company has the best possible standards and processes within the industry. The input-output table puts on the vertical axis all the inputs that are needed in the process. On the horizontal axis, all outputs are enumerated which are left over in the process. Table A shows the case of beer.

This simplified version for the case of beer indicates the process of inputs being converted into outputs and the other waste streams that are generated in the process. Cleaner production will aim at improving the process, for example, by reducing the consumption of water. A more efficient use will halve the amount of water needed in order to produce the same amount of beer. The malt, on the other hand, cannot be changed. After all, the taste of beer is the result of a fermentation process which cannot be altered if the end result is to be that recognizable drink with foam called beer.

**Table A:** Basic Input-Output table

Cleaner Production i/o table

i \ o	Beer	H <sub>2</sub> O	Spent Grain
H <sub>2</sub> O	10	80	10
Malt	8	1	91
.....	100	100	100

i \ o	Beer	H <sub>2</sub> O	Spent Grain
H <sub>2</sub> O	10	80	10
Malt	8	1	91
.....	50	50	50

The second part of the methodology is unique to Zero Emissions: the output-input table. Zero emissions stands for “nothing gets lost--everything is reused” and as a result there is no waste and no pollution. After all, that is the way nature works. Everyone produces waste, but it is always food for someone else. This requires a creative approach and is the basis of the search for value added components. The vertical axis enumerates all the outputs which are not part of the final product; on the horizontal axis a creative inventory is made of all possible users. Obviously, this process is only valuable when the input-output table has been established and documented and when the company has made all possible efforts to reduce cost and improve the throughput, i.e. do more with less.

When all outputs have found a way to be used as inputs for other industries, then the industry under examination has attained the target of zero emissions. Each of the new uses should then undergo the same process. Zero emissions are not achievable within each business alone, but only by considering clusters of industries which all share responsibility. Just as the ecosystem around the tree deals with waste leaves as food, it is possible to imagine that all waste be reused to achieve the zero emissions target in a output-input process. This process requires a multi-disciplinary approach, searching for options not previously considered within the business. A simplified version of the output-input table might look like the following:

$\begin{array}{c} o \\ \diagdown \\ i \end{array}$	cleaning	fish farm	algae	irrigation	mushroom	earthworm	.....	Total
H <sub>2</sub> O	2	80	10	8	0	0		100
	100	100	100	100	100	100		100
Spent Grain	0	0	0	0	60	40		100
	100	100	100	100	100	100		100
.....								

The Zero Emissions Research Initiative thus offers a tool for analysis. The output-input tables offer an instrument for channeling in a most creative manner the products and components which today find no value in the plantation processing or production process. It leads to the identification of potential value-added uses of elements that have no market value today. Such an exercise requires homework indeed. A detailed biochemical dissection of the residues involved is a prerequisite to being able to start the work.

## GUNTER PAULI

Gunter Pauli obtained his Master's in Business Administration from INSEAD, Fontainebleau, France. His entrepreneurial activities span business, culture, science, politics, and the environment. Under his leadership, a small European company pioneered the first ecological factory in Europe. He founded and directs the "Zero Emissions Research Initiative" of the United Nations University in Tokyo where his focus is redesigning manufacturing processes into non-polluting clusters of industries. He is co-founder of the ZERI Foundation which aims to implement the research findings. Fluent in six languages and having lived on all continents, he is a world citizen. He has written eight books which have been published in 15 languages. His next book *Upsizing*, will be published in the Fall of 1997. Since 1994 he has lived with his wife and two children in Kamakura, Japan.

ZERI Foundation in Geneva:

<info@zeri.org>

UNU/ZERI in Tokyo:

<pauli@hq.unu.edu>

Gunter Pauli

53-70 Jingumae, Shibuya-ku

Shibuya 150

Tokyo

Japan



### *Section III: What Role Can Capital Markets and Financial Institutions Play?*

This section discusses the financial markets and their bias toward rewarding short-term goals and undervaluing environmental resources, rather than investing in longer term, sustainable projects. This is disturbing because of the magnitude of the resources in question: \$15 trillion for the world stock markets and \$16 trillion for the bond markets (1994). Against this background the authors present a more optimistic view of a world in which “signals of change” are creating mechanisms and incentives for the financial markets which are more conducive to sustainable development.

## Eco-efficiency and the Financial Markets<sup>1</sup>

Stephan Schmidheiny and Federico J. L. Zorraquin  
World Business Council for Sustainable Development

### ABSTRACT

Do the financial markets support sustainable development—forms of development that allow people today and in the future to meet their needs? There are reasons to believe that they do not, in that they may encourage short-term goals, undervalue environmental resources, discount the future, and favor accounting and reporting systems that do not reflect environmental risks and opportunities. The issue is pressing because investment decisions being taken now set the paths of development for the next few decades, when human populations will increase rapidly and billions of people will enter market economies. Businesses that use and sell natural resources and cause pollution have grappled with environment and sustainable development issues longer than have companies dealing in shares, banking, and insurance. They have developed the concept of eco-efficiency: increasing value added while decreasing pollution and resource use. All businesses are facing changes in the marketplace: polluter pays principle, which will force the cost of a company's environmental damage onto the company books; greater use of economic instruments, which reward the eco-efficient and punish their lagging competitors; and possible changes in tax structures and national accounting systems. As these trends change the bottom lines of companies, financial markets will change the ways in which they value them. The financial community will start rewarding eco-efficiency for purely financial reasons.

*Will financial markets soon be systematically rewarding environmentally successful companies while penalising offenders? Some serious people think so.* Institutional Investor, March 1995

This article addresses a burning question that almost no one seems to be asking: Are the workings of the world's financial markets—stocks, bonds, debt, currency instruments—and the financial community a force for sustainable human progress, or are they an impediment against it?

In other words, do the financial markets encourage a short-termist, profits-only mentality that ignores much human and environmental reality? Or are they simply tools that reflect human concerns, and so will eventually reflect concerns over poverty and the degradation of nature by rewarding firms and projects that increase equity of opportunity and that rationally manage environmental resources?

These are crucial questions. The world stock market capitalization (the sum of all stock markets) at the end of 1994 totaled more than \$15 trillion (\$15,000 billion)—more than 2.5 times the gross national product (GNP) of the United States (IFC, 1995). The world bond market at the end of 1993 held more than \$16 trillion in publicly issued debt (Douglas, 1995). It is a little frightening not knowing whether such vast sums are working for or against sustainable progress.

<sup>1</sup> This article is reprinted from *Financing Change: the Financial Community, Eco-efficiency, and Sustainable Development*, by Stephan Schmidheiny and Federico J. L. Zorraquin, 1996, Chapter 1, with permission of MIT Press.

There are several other closely related reasons why these questions need early answers. First, the world's population is growing rapidly and may double to more than 11 billion sometime next century unless serious measures are taken to slow the increase (UNPF 1995). And there are roughly 1 billion very poor people on the planet today (World Bank 1990). The concept of sustainable human progress has come to be summed up in the ideal of "sustainable development," best defined as a style of progress or development that "meets the needs of the present without compromising the ability of future generations to meet their own needs." (WCED 1987)

Obviously, economic "no growth" is not an option if the needs of the present poor or of future, larger, generations are to be met. The World Commission on Environment and Development (WCED) argued that sustainable development does imply limits—not absolute limits but limitation imposed by the present state of technology and social organization (WCED 1987). Growth, then, will have to be extremely "eco-efficient," a term the Business Council for Sustainable Development (BCSD) coined to describe a process of adding ever more value while steadily decreasing resource use, waste, and pollution (Schmidheiny with BCSD 1992).

Second, major investments are being made now that will determine the sustainability of today's economic growth: investments in energy, transport, agricultural, water, and sewage systems. Asia (excluding Japan)—perhaps the fastest growing "developing" region on earth—needs to invest about \$1 trillion (\$1,000 billion) in its infrastructure between 1994 and 2004, with about 70 percent of this total being power- and transport-related, according to an estimate by Standard & Poor's (Kennedy, November 26, 1994). Much of this capital must come from the financial markets: the equity markets, bond markets, and the banks. But will these investments reflect environmental realities? To take one example, coal has traditionally offered the lowest costs for generating electricity. Yet burning coal also emits a large amount of carbon dioxide (CO<sub>2</sub>). A great many of the power plants being planned and financed in Asia are traditional coal-burning plants at a time when the governments of the world have agreed to stabilize their CO<sub>2</sub> emissions at 1990 levels by the year 2000.

Third, sustainable development means passing along to future generations certain stocks of environmental capital: productive topsoil, clean air, predictable climate, an intact ozone layer, fertile forests, abundant fish stocks, and genetic diversity of both plants and animals. Scientists warn that all these resources are under threat by the activities of the present generation. Again, to cite but one

*Economic "no growth" is not an option if the needs of the present poor or of future, larger generations are to be met. Growth will have to be extremely "eco-efficient"—adding ever more value while steadily decreasing resource use, waste, and pollution. Major investments being made now will determine the sustainability of today's economic growth. Stocks of environmental capital are under threat by the activities of the present generation.*

example, over the past century the extinction rates among plant and animals species have risen to 100 to 1,000 times “natural” or “background” rates (Lawton and May, 1995). These human-caused extinction rates are expected to accelerate, even without global warming. What, if anything, can the financial community do to reverse such trends?

Fourth, more than 3 billion people in Eastern Europe, Asia, and Latin America are changing from more or less centrally planned economies to market economies. If economic growth continues to follow patterns predicted by the World Bank for the coming decade, by the year 2020 the present “rich world” share of global output could shrink to less than 40 percent from more than 55 percent today, measured in terms of purchasing power parities (Woodall 1994). By then, China, India, Indonesia, Brazil, and Mexico will be on the list of the world’s 15 biggest economies. All are countries with high population growth rates; in all, natural resources are already under great pressure. In a warning that could apply to several other rapidly developing nations, the World Bank reported to Indonesia in 1994 that growing pollution and congestion in its main urban centers could make it “increasingly difficult for Indonesia to compete for foreign investment, especially in the higher technology industries needed to enhance the productivity of the labor force” (Richardson, November 26, 1994). How can these countries see to it that the financial markets back projects that favor sustainable, long-term progress rather than a “get-rich-quick” approach?

Fifth, “socialism” appears to be dead. The “market” is taking over as the determiner of the direction of investments. Markets are being deregulated; they are becoming global, which severely limits the ability of individual governments to control them; and goods and services once provided by governments are being privatized. Private investment has taken over from “foreign aid” as the main mover of capital into the developing world. Let us look at some figures.

Flows of private capital to developing countries quadrupled between 1986 and 1994, by which point they had reached more than \$170 billion a year, according to the World Bank (1995). This included such things as foreign direct investment (such as investment by foreign companies into joint ventures), private debt (such as loans by commercial banks or proceeds from the sale of bonds internationally), and portfolio equity investment (such as purchases of shares by pension funds or mutual funds).

The Organisation for Economic Cooperation and Development (OECD) put the 1994 flow of official development assistance (ODA) from members of its Development Assistance Committee (most of

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the world's aid-giving countries) at \$57.3 billion (Press release, June 21, 1995). For the fourth consecutive year, private flows rose and official flows fell in real terms. These trends are expected to continue. An international group of development charities reported in 1995 that ODA that year represented a smaller proportion of wealthy nations' GNPs than at any time over the past 20 years (International Council of Voluntary Agencies, Eurostep, and Actionaid, 1995). Should the U.S. government follow through on some U.S. lawmakers' efforts to slash its aid budget, the decline would accelerate sharply. Given that other countries, such as Canada, are threatening to follow the U.S. lead, "foreign aid" as traditionally practiced may be virtually over.

Governments, both donor and recipient, have never really managed to make aid flows environmentally sound. But at least with these government-to-government transfers it is clear that this responsibility lies with governments. How are the environmental quality and sustainability content of the new private investment flows to be assured? This is an important issue because, according to Bradford Gentry at Yale University's Center for Environmental Law and Policy, "these private investments are often made in projects with immediate environmental implications, such as: privatizations of government-owned manufacturing enterprises; concessions to private developers of power, water, transportation, and other infrastructure facilities; joint ventures for the operation of existing or the construction of new manufacturing plants; as well as energy and natural resource projects" (Gentry 1992). Thus if the market is taking over from governments as the coordinator of human progress, it is crucial that the market tend toward sustainability.

There are even those who argue that the increasing power of financial markets is actually threatening the power of national governments. According to British journalist Hamish McRae (1994):

*The rise of the power of the financial markets, together with their increasingly international nature, has inevitably reduced the power of the individual national governments. They have to frame their economic policies with an eye to the way these will be received by the world's financial community. If they fail to do so, they will be punished by either a run on the currency or higher interest rates, or both.*

*Governments, both donor and recipient, have never really managed to make aid flows environmentally sound. If the market is taking over from governments as the coordinator of human progress, it is crucial that the market tend toward sustainability.*

## SEVEN KEY ASSUMPTIONS

To some readers, worrying about how the financial community can support sustainable development will seem as farfetched as wondering how stock market results can help them pick horse race

winners. But such work is already being done within all sectors of that community. Our purpose is largely to report the current efforts of market players.

But first we want to set out some thoughts on how difficult such work can be. There are seven suppositions that helped us think about the questions asked in the preceding section. We do not offer these as truths, or even as strong beliefs, but as assumptions that emerged in our discussions with experts as we researched this topic. Taken together, they are worrying, and suggest how much change will be required before financial markets encourage, rather than discourage, sustainable development.

- Sustainable development requires investments with long-term pay-back. Financial markets seek short-term pay-back.
- Efforts toward eco-efficiency by a company often reduce present earnings in favor of future potentials. Financial markets favor companies with high present earnings over those with future potentials.
- Given low resource prices and the ability of businesses to keep costs for much environmental damage “external” to their own balance sheets, the profitability of becoming eco-efficient is reduced. Eco-efficient companies are often not preferred by financial markets.
- Sustainable development requires massive investments in developing countries. Financial markets put a high risk premium on investments in developing countries.
- High taxes on employment encourage labor productivity, thereby enhancing unemployment, while low resource prices discourage resource efficiency.
- Accounting and reporting systems do not adequately convey potential environmental risks or opportunities. Financial markets are compelled to make decisions based on biased information.
- Sustainable development is concerned with the importance of the future. Financial markets discount the future routinely and heavily.

*There are seven suppositions that emerged in our discussions with experts as we researched this topic. Taken together, they are worrying, and suggest how much change will be required before financial markets encourage, rather than discourage, sustainable development.*

No discussion of the relationships between markets and sustainability would be complete without reference to some academic work that seems to suggest that markets virtually always work against sustainability. In 1976, Colin Clark's *Mathematical Bioeconomics: The Optimal Management of Renewable Resources* was published as a volume in a series on pure and applied mathematics. Clark was particularly concerned with the concept of maximum sustainable yield (MSY). This is the highest number of trees, fish, nuts, or any other renewable resource that can be harvested year after year. If you harvest any more, the resource cannot produce such a high annual "surplus." But harvest any less and you are below the maximum. The MSY is essentially the highest "interest" to be gained from a renewable resource.

Clark has a great deal to say about the limits of the MSY approach, but he offers a hypothetical case early on. Assume there are 75,000 blue whales in the oceans, and that the MSY is 2,000 whales per year. Imagine for simplicity's sake that only one company can hunt this stock, and that each processed whale has a market value of \$10,000. By whaling sustainably 2,000 whales a year the company would produce an annual revenue of \$20 million.

Now assume that it is possible for the company to catch all 75,000 whales in a single year, producing a lump sum revenue of \$750 million. If this were invested at a modest rate of return of 5 percent a year, it would yield an annual return of \$35.7 million, considerably above the \$20 million figure and without the inconvenience of whaling. Although this is a simplistic model, in 350 pages of highly mathematical discussions of the complexities of market elasticity, discount rates, and so on, Clark shows that the basic findings remain the same for most renewable resources.

Basically, the profitability of harvesting a renewable resource rarely encourages sustainable harvesting; it stimulates the opposite, even where there is a single owner and poorly controlled competition, as in most fisheries today. To make matters worse, the MSY of long-lived, slow-reproducing species such as whales or tropical hardwoods is very low, on the order of 2 percent. Only short-lived, fast-reproducing species such as shrimp have an MSY beginning to equal market interest rates. The large unpredictable fluctuations of some stocks, such as many fish species, also encourage exploitation sooner rather than later.

"The argument illustrates one of the fundamental aspects of the economics of resource management," Clark wrote. "The owner of a resource stock tends to view that stock as a capital asset; this is

*The profitability of harvesting a renewable resource rarely encourages sustainable harvesting; it stimulates the opposite, even where there is a single owner and poorly controlled competition.*

equally true for exhaustible resources and for renewable resources. He expects the asset to earn dividends at the 'normal' rate of return; otherwise, the owner would attempt to dispose of the asset." He adds that this result may be thought of as "the first fundamental theorem of resource economics," and was developed as early as 1931.

Today this syndrome is best seen in the activities of many international logging companies, which acquire from governments the rights to log natural forests at prices far below any reasonable market rates. One study of this phenomenon found that although obligations to reforest presented liabilities, they rarely appeared on balance sheets, and in fact, frequently the obligations were ignored (Mansley 1995). Given the companies' windfall profits and few announced liabilities, their shares have performed extremely well over the past few years. It is not clear whether the shareholders understand the unsustainable nature of the companies' activities—from both a profitability and an ecological point of view—and are poised to sell out before windfall profits cease. But it is clear that the globalization of investment flows is speeding the destruction of natural forests.

## BUSINESS AND THE ENVIRONMENT

Yet the picture may not be as bleak as we have suggested. Although concern about the relationships between the financial markets and sustainable development is still very much in its infancy, it is growing. Even more important, a number of business leaders, investors, analysts, bankers, insurers, accountants, and raters have moved beyond a focus solely on downside risk toward one of taking advantage of upside opportunities. In each sector, a few actors are making a good business out of society's search for sustainability.

In the rest of this article we examine how these sustainability issues got onto the agendas of business in general and of the financial community in particular. To do so, we must look at how the business view of "the environment" has changed rapidly over the past decade.

Until fairly recently, the environment was discussed as something separate from human activities except where those activities damaged it. A small minority—often referred to as environmentalists—were deeply worried over that damage; the vast majority were not. Businesses' concern for the environment expressed itself through efforts to comply with environmental regulations and to lobby against them.

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During the eighties, increasing evidence of global carbon pollution, ozone depletion, and the loss of species, forests, and fertile soils suggested that environmental damage was more global and more serious than previously expected. It also became clear that the environment was not a place outside of the human sphere but rather a set of processes affected by all human activities: business, manufacturing, consuming, farming, fishing, mining, and so on. Thus the old battle between those championing the environment and those advocating “development” began to die down slightly when the two goals were seen more and more as inseparable sides of the same coin. It became harder to worry about the natural environment and not be concerned about people’s needs and aspirations. It also became harder to worry about people and not be concerned about their impact on the natural environment.

This new view was best encapsulated in the concept of sustainable development. Since the modern form of the concept (an idea as old, in fact, as the earliest hunter-gatherer societies) emerged in the mid-eighties, there have been many books written and organizations established on sustainable development. There is broad agreement that it is not a goal restricted to “developing” countries. All nations are developing in the dictionary sense of “evolving the possibilities of,” and many industrial nations are evolving their possibilities in ways that make the planet less sustainable, both because of consumption patterns and because of their release of global pollutants.

Yet the concept remains ill defined. It is much more obvious in the negative than the positive. Present rates of population growth appear unsustainable, but it is less clear what a sustainable human population might be. We may be burning too much coal, oil, and gas for the climate’s sake, but it is not clear precisely what a sustainable energy path might be.

Imprecise as it is, the concept is very powerful. People instinctively feel that the first duty of parents is to provide for their children. Unsustainable development is the opposite; it means that the present generation takes resources away from future generations. It is stealing from our children.

The idea of sustainable development has been an effective force in bringing new groups into debates about progress and the environment. A growing number of economists are busy defining sustainability in economic terms. Jurists are wrestling with the legal basis for equity between this generation and those to come. Some politicians worry about how the craft of politics can be made to peer beyond the next election to concern itself with the needs of our progeny.

*The concept of sustainability remains ill-defined; yet it is very powerful. People instinctively feel the first duty of parents is to provide for their children—unsustainable development is the opposite.*

Business has been slow to come to terms with sustainable development, partly due to a traditional resistance toward organized forms of environmental concerns and partly due to an inability to see what business has to do with the non-market needs of people today or the necessities of people in the future, who do not participate in today's markets.

But business is beginning to take an interest in these issues. The journal *Tomorrow* recently listed 40 organizations bringing businesses together for environmental and sustainable development purposes (1994). It even gave these bodies their own acronym: GBN (Green Business Network). Business is also taking part in many organizations that combine leaders from the corporate world with those from politics, science, and other non-business groups; examples of these include the (US) President's Council on Sustainable Development and the Round Tables on the Environment and the Economy in Canada.

Business has made progress in grappling with these issues along what can be seen, with hindsight, as a predictable path. First came the more progressive companies in sectors with the most obvious environment/development concerns: multinational chemical and energy companies and the big manufacturers. Retailers got involved next, largely in response to "green consumerism." Then big service companies realized that they were not immune, given their use of energy, paper, and transport.

In the financial community, there had long been a few "green investment" services offering portfolios containing the shares of companies not associated with excessive pollution or misuse of environmental resources. But the first mainstream concern in the sector came from insurance companies being hit by cleanup costs for contaminated industrial sites and by costs of damage from what seemed to be an alarming rise in weather-related natural disasters.

Most banks resisted engagement in the issue, arguing that they use virtually no natural resources and emit little pollution. When the BCSD first started looking for members in 1990, it could not find a single banker in the industrial world willing to join. (In 1995, the BCSD merged with the World Industry Council for the Environment (WICK) to become the World Business Council for Sustainable Development (WBCSD). It is affiliated with all national BCSDs.)

Since then, however, a series of US court cases suggested that banks might be held responsible for the environmental damage to industrial sites caused by companies in which the financial bodies had certain types of ownership or management functions. These rulings concentrated the minds of the international banking com-

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munity profoundly. By the beginning of the UN Conference on Environment and Development (the Earth Summit) in June 1992, bankers had produced, and many had signed, an international “Statement by Banks on the Environment and Sustainable Development.”

Just as different companies and sectors of business have been drawn into environmental concerns at different times, depending on their circumstances, so too have officers within companies. Most firms first tried to contain the environment in a special “environmental office.” It soon became apparent that this was as unworkable as the political approach of creating a weak Ministry of the Environment, and then holding it responsible for the damage done by the more powerful Ministries of, for example, Transport, Industry, Mining, and Agriculture. So in progressive companies, the chief executive officer (CEO) became in practice also the chief environmental officer.

The task then became one of getting the CEO’s new environmental concerns spread throughout the firm. Much has been written about this process in different companies. But it is intriguing to note that it is apparently easier to inculcate environmental thinking into the work force than into financial directors. The U.S. manufacturing company 3M is famous for drawing from its work force over the past 20 years ideas for more than 3,000 pollution-prevention projects, which have saved the company more than \$500 million (Schmidheiny and BCSD 1992). It is not hard to see why workers were ahead of the financial officers. Most have a daily close-up view of corporate resource waste and pollution. Once asked to consider these problems—and appropriately rewarded for doing so—they are perfectly placed to provide sound ideas.

Only much more recently have company financial officers begun to take an interest in sustainable development issues. These individuals are traditionally cut off from environmental concerns that do not get on the balance sheets. A report of the One Hundred Group of Financial Directors (the financial officers of the 100 top British companies) argued that this has been largely because of the difficulties of quantifying and measuring the costs of these risks and the costs and benefits of avoiding them (1992). But the report warned that companies lax in these matters can cause investors and banks considerable losses.

For much the same reasons, sustainable development concerns have been slow to infiltrate the financial markets. The general view is, “If we can’t measure it, don’t tell us about it.”

Pick up any textbook on financial markets and banking and look in the index; you are unlikely to find an entry for the “environment”

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or “liabilities, environmental.” (This was also true for the majority of business texts published before about 1990; now most of them have a lengthy list of subheadings under “environment.”)

As we researched this article, we spoke to many members of financial market firms, basically asking them how they or their companies lined up in terms of environmental or sustainable development issues. The first reaction was usually surprise. This gave way to what looked a little like fear, a fear that the financial community was going to be dragged into the same messy environmental discussions and publicity that have affected other businesses.

Not only do investment banks, stock brokerage firms, and most other financial market institutions not release toxic wastes, they do not foreclose on firms owning contaminated property and do not face the associated financial liabilities. Environmental risks are hard to quantify in such businesses, and it is only now becoming obvious why merchant bankers and stockbrokers should bother to look at such numbers for businesses they are considering investing in.

“We are not a major devourer of natural resources like a chemical company or a paper company,” said a spokesperson for a global stock brokerage firm, when asked if they had an environmental policy. “But, we have policies on most things, so I suppose we must have an environment policy,” he added. In contrast, Salomon Brothers, the investment bank, has complex programs on recycling, waste reduction, energy efficiency, environmental education, and environmental financial risk management (1992).

But most of the market participants’ answers to the question of the relationship between sustainable development and the financial community can be summed up in yet another question: “Why should I care?”

One answer, but far from the most important one, is that environmental groups are now trying to achieve their goals by putting pressure on the financial community.

Some groups have protested against Initial Public Offerings on stock exchanges. In 1993, a consortium of environmental pressure groups tried to dissuade fund managers from investing in an offering of Barito Pacific, an Indonesian timber company. After its 1994 annual meeting, Greenpeace International announced that it was going to spend more effort influencing the public and private cash flows for projects that affect the environment (Leggett 1995). The organization did not make clear how it intended to do this, but earlier that year it had started issuing press releases and writing to investment companies when it saw a market event that it considered harmful.

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In October 1994, for example, Greenpeace warned European fund managers about plans to float a polyvinyl chloride company, European Vinyls Corporation (EVC), on the Amsterdam stock exchange. The group, which has campaigned against the use of chlorine, argued that “environmental concerns are fundamental to EVC’s market prospects and profitability and that ignoring these concerns could be ruinous for investors and the company itself.” Thus when it involves itself in the markets, Greenpeace wisely emphasizes financial damage rather than environmental damage. The group has also organized several meetings with insurers, bankers, and other financial people, mainly to warn them about investments that could accelerate climate change.

“And of course we still have our in-the-street confrontational tactics,” said a Greenpeace representative. “The commercial banks, which rely on the general public for business, would be deeply embarrassed by that sort of bad publicity” (Leggett 1995). (We quote Greenpeace, not because we necessarily agree with them, but because they have been by far the most sophisticated green group in trying to get their issues onto the agenda of the financial community.)

When Michael Heseltine was president of Britain’s Board of Trade, he told the British financial community in a 1992 lecture: “Sooner or later, even the most naive environmentalist is going to grasp the extent to which companies, who are their most accustomed targets, operate within a context set by shareholders, lenders and insurers. At that time, the green searchlight will be turned directly on the way in which you discharge your environmental responsibilities” (Pointon 1994).

Thus for various reasons, commercial banks, investment banks, insurers, and others in the financial community who are apparently far from the front lines of environmentalism are now being drawn into the fray. But how far can businesses go in promoting sustainable development and still be acting as businesses?

*Business has only a narrow band in which to modify its environment-affecting activities: too little action, and a company may not be complying with regulations; too much action, and it may be spending money in ways that weaken its competitiveness.*

## ECO-EFFICIENCY VERSUS SUSTAINABILITY

Business has only a relatively narrow band in which to modify its environment-affecting activities. Too little action, and a company may not be complying with regulations. But too much action, and it may be spending money in ways that weaken its competitiveness. Many companies that are driven more by values than by strict profit considerations will go ahead and spend some of that money to move “beyond compliance.” But there are tight limits, even for such companies; a business that does not make money soon ceases to be a business.

Thus most of the impetus for progress toward sustainable development must come from voters, the governments they elect, consumers, parents, and citizens' groups. All of these will have to cooperate to build a new societal framework in which business will act.

When the BCSD was formed to offer the 1992 Earth Summit a "business perspective," it faced the problem of finding something to say that made sense in terms of environment and development but that also honored the basic realities of the marketplace. Thus the 50 original members, all CEOs or equivalent, spent much of their report to the Rio conference advising governments on which policies and rules of the game needed to be changed (Schmidheiny with the BCSD 1992).

It also held a contest to come up with a phrase that most neatly summed up the idea of sustainable development at the company level. The winner was "eco-efficiency," which denotes both economic and ecological efficiency. According to the World Commission on Environment and Development, sustainable development "is not a fixed state of harmony, but rather a process of change in which the exploitation of resources, the direction of investments, the orientation of technological development, and institutional change are made consistent with future as well as present needs" (WCED 1987). Much the same could be said for eco-efficiency: it is not a fixed state of harmony, but rather a process of change in which the exploitation of resources, the direction of investments, the orientation of technological development, and corporate change maximize value-added while minimizing resource consumption, waste, and pollution.

But eco-efficiency should not be confused with sustainable development, which is a goal for society as a whole. Though it may also require some encouragement from society in setting frameworks, eco-efficiency is a task for each entity within society. It is even possible to have a world in which every company was becoming ever more eco-efficient and yet the planet's resource base was deteriorating due to population growth and the sheer increase in business and industry.

Virtually all companies cause pollution, if only through their energy use. The UN Conference on Trade and Development (UNCTAD) proposed a strict definition of a "sustainable business": one that "leaves the environment no worse off at the end of each accounting period than it was at the beginning of that accounting period" (1995). It then offered the obvious conclusion: "It is perfectly clear that few, if any, businesses, especially in the developed economies, come anywhere near to anything that looks remotely like sustainability."

*Most of the impetus for progress toward sustainable development must come from voters, the governments they elect, consumers, parents, and citizen groups. All of these will have to cooperate to build a new societal framework in which business will act. The BCSD phrase that most neatly summed up the idea of sustainable development at the company level was "eco-efficiency," which denotes both economic and ecological efficiency.*

It went on to quote a number of multinational corporations that had come to grips with this fact. The Body Shop, a cosmetics company that trades on its green image, wrote, for example: "We challenge the notion that any business can be 'environmentally friendly'. This is just not possible. All businesses involve some environmental damage. The best we can do is clear up our own mess while searching hard for ways to reduce our impact on the environment."

UNCTAD had conducted a survey in 1994 among multinational firms on their views of sustainable development; the results were based on responses from 73 companies in 14 countries, mostly in Europe, but including South Africa, South Korea, Hong Kong, and Japan. The questionnaires were filled out by the officers most knowledgeable about environmental issues, usually the senior environmental managers. The results were extremely contradictory.

Eighty-two percent of the respondents said that their companies formally recognized sustainability; yet the majority of these "formal recognitions" did not define sustainability. Ninety-six percent thought it required a partnership approach among government, business, and society; 86 percent believed it meant tackling both social and environmental problems; and 82 percent found it compatible with the profit ethic. However, 59 percent believed that sustainability did not involve the needs of future generations; 45 percent said it was synonymous with environmental management systems; and 37 percent felt that their organizations had already achieved sustainability.

So although most companies state formally that sustainability is a "good thing," there is some confusion over what it actually entails. "Over 70 per cent of respondents were influenced by, inter alia, the ICC (International Chamber of Commerce), Agenda 21 (the summary statement of the 1992 UN Conference on Environment and Development) and the Rio Summit, their own company, books and economic journal articles, the media, the Brundtland (WCED) report, their national government, and professional or trade associations," UNCTAD reported. "Of these, easily the most influential were the first four," and environmental pressure groups were among the least influential. It also noted that the fact that the ICC's Charter for Sustainable Business does not actually mention or define sustainability "goes some way towards explaining what looks like naive understandings of the concept amongst many of the respondent businesses."

The survey also quoted, anonymously, some remarks of the respondents. The differences in views are striking; for example:

*Eco-efficiency should not be confused with sustainable development, which is a goal for society as a whole. Eco-efficiency is a task for each entity within society.*

*People need to get back to the old religion of making money and risking things. If industry went back to risking things, sustainable development would happen. (Italy)*

*The quest for economic growth, as demanded by national and international financial institutions, is the cause of much environmental and human exploitation. (United Kingdom)*

*Governments need to set clear, consistent, tax neutral and common sense targets for environmental performance and then give business the freedom to innovate and deliver the desired performance. This will lead to sustainability within a time frame of approximately 10-30 years . . . ultimately there will be a new generation of products that will build a sustainable future. (Switzerland)*

*It does not pay to be sustainable. Good housekeeping saves money, but the pursuit of sustainability is beyond good housekeeping-and can cost. (United Kingdom)*

The survey suggests that although most multinationals say publicly that they work toward sustainable development, few have decided how to make it a part of corporate strategies. This is hardly surprising, as sustainable development does require concern for future generations and for needs that cannot easily be met by market transactions. These are issues that business has just as much trouble with as anyone else. So business joins scientists, jurists, political leaders, philosophers, and environmentalists in agreeing that “it is unsustainable to be unsustainable” and in having difficulty figuring out what activities are “sustainable.” Some company directors—the ones who have moved “beyond compliance”—are therefore working on “good housekeeping” or eco-efficiency and calling it sustainability because that is the current word.

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## BEYOND ENVIRONMENT

One of several revolutions occurring in the world today might be called the “participation revolution.” The communications part of the technology revolution allows people to know instantly what is happening in the far reaches of the globe. So children in New York hear of, and to some extent care about, what is happening in the rain forests of Brazil. This knowledge and concern lead people to want to participate in more or less serious or trivial ways. The “green consumer” movement is just one example of this.

Many people want to take part in what business is doing in new ways, such as influencing what companies produce as well as how



they produce it and how they treat their employees and their neighbors. This can be local or global and business may be targeted through no fault of its own. When France announced in 1995 that it was going to resume nuclear weapons testing in the South Pacific, protesters in North America, Europe, and Australasia organized boycotts against French products. A recent survey found that 75 percent of US households were boycotting some products-nearly half of these because of displeasure with company policies (Marr 1995).

In June 1995, Shell UK set out to dispose of a large oil storage buoy by sinking it in the deep ocean (*The Economist*, June 24, 1995). It had the backing of the British government and many scientists, who had decided-after careful consideration of the environmental, safety, and economic considerations and of the toxic materials involved-that deep-water disposal was a better option than bringing the buoy to shore and dismantling it. Yet other European governments opposed the disposal plan, as did environmental groups and a large segment of public opinion. The general public seemed to feel strongly that if they were being asked to recycle cans and bottles and not throw trash in waterways, it was simply not appropriate to drop such a very large oil installation into the depths of the ocean.

Shell UK gave up its disposal strategy to study alternative disposal options. Future events may prove that, practically and scientifically, Shell UK was right in its original scheme. Its mistake-aside from building a large object without clear, agreed plans for its disposal or recycling-was in not taking into sufficient account the great mass of the European public who feel they have a say in Shell's operations.

In what may be a new trend, Shell was criticized not only by environmental groups but by other companies. The Danish biotechnology firm Novo Nordisk, as a signatory of the ICC Business Charter for Sustainable Development (which called upon signatories to take some account of their suppliers' environmental policies), issued a statement saying it objected in principle to the dumping of industrial wastes at sea (Elkington 1995). It urged Shell to inform its various "publics," including its business partners, about the logic of its disposal plan.

John Elkington, author of *The Green Capitalists*, wrote of the Shell case: "The controversy, which has been more about public perception of the environmental priorities than about ecological impacts, marks the emergence of a new era which requires business to focus on a triple bottom line: economics, environment and social equity."

Sustainable development does go beyond environmental management into issues of equity of opportunity, so that people both

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now and in the future have a greater chance of meeting their needs. Calling upon business to worry about equity of opportunity and future generations may seem farfetched, but in a sense business is already doing so. Several US companies have been stung by reports revealing that their products are being made by children in what North Americans regard as “sweatshop” conditions. Children are certainly real-life representatives of future generations.

Child labor is an extremely complex issue, because in many developing countries the choice for a child might not be between making shirts and going to school. It may be between making shirts and taking up prostitution or working in a quarry or a dangerous factory. It has been estimated that in 1993/94 between 30,000 and 50,000 children were thrown out of work in textile mills in Bangladesh because suppliers were worried about losing business (*The Economist*, June 3, 1995). Many of those fired went into prostitution or welding jobs. But in business, public perception remains as important as reality.

The Boston-based ethical investment firm Franklin Research and Development estimates that less than 5 percent of US retailers and branded-goods companies are getting involved in human rights issues, but these include some of the biggest and best known, such as Levi, Wal-Mart, Sears Roebuck, Reebok, The Gap, Nike, and Nordstrom (*The Economist*, June 3, 1995). IKEA, the Swedish home products store, has decided the carpets it sells must be certified as having been made without child labor. The British-based National Provident Institution, which offers a selection of “ethical” investment programs, found in a 1995 poll of British consumers that concerns about modern slavery and abuse of workers’ rights had risen above concerns for the environment and animal welfare (Gallup Omnibus Survey into Investor Attitudes, April, 1995).

In fact, many companies are involved in what might be called the “social” side of sustainable development, without labeling it as such. They usually call it something like “community relations.” A recent survey in Britain of companies involved in community relations work found that in the eighties this was driven by just a few enthusiastic board chairs regarded as “dotty” by their peers (Fazey 1995). But “getting involved in community is no longer idiosyncratic philanthropy, not least because real commercial benefits have been seen to accrue from it,” the survey concluded. It noted the case of the glass group, Pilkington, which had pioneered community involvement in its region of Britain. This record was widely credited for the success of its defense against a hostile takeover in 1986-87 by a company that disdained corporate community involvement.

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“Community involvement” was once restricted to big, Northern-based multinational companies. But now more developing-world companies are also practicing it. Aracruz Celulose S.A. of Brazil produces more than 1 million tons of bleached eucalyptus pulp every year from plantations on land in southern Brazil that had been deforested by farming and charcoal-making decades ago (Celulose 1995). But the company also plants 27% of its land area in native, noncommercial tree and plant species, in order to preserve ecosystems. It supplies seedlings to local farmers and buys back the wood, but it also gives seedlings out free so farmers can meet their own wood needs without destroying the native forests. Aracruz invested \$120 million to combat air and water pollution over 1992-95, and has secured international quality control certification. It has put a total of \$125 million into schools, hospitals, and housing in the region, both those used by its own workers and others. It even runs ecological programs to protect the reproductive cycles of five threatened species of sea turtles.

A lot of this work is enlightened local self-interest, such as trying to keep its workers and their families healthy and well educated. Aracruz also realizes that because it is involved in forestry work and running paper mills in the developing world, it will automatically draw the attention of environmental groups. Thus it needs to be cleaner than many timber operations and paper mills operating in the remoter parts of North America. It spends a great deal of money communicating its environmental and social programs to the rest of the world. As trade and markets become more open and global, a growing number of developing-world companies will pursue similar strategies.

### COMING TO TERMS WITH ECO-EFFICIENCY

In grappling with the immediate goal of eco-efficiency and the more ambitious and all-embracing goal of sustainable development, business groups have had to consider several complex issues. These include such things as internalizing environmental costs, the polluter pays principle, and greater use of economic instruments.

The concept of internalizing environmental costs has an important bearing on the relationship between financial markets and eco-efficiency. At the first BCSD meeting, in 1991, the group had difficulty knowing what advice to offer the 1992 Earth Summit, given the political, scientific, and financial uncertainties surrounding environment and development issues. What could a group of CEOs, all of whom were dedicated to free and open market systems, helpfully say?

At this point, one member argued that, as the group favored open, competitive markets, it should recommend the internalizing of environmental costs, so that markets would better reflect environmental as well as economic truths. This provided the Council with a logical way into the debate.

The concept is simple, the reality much more complex. The idea is that the price of a good or service should reflect all the costs associated with it. For example, the cost of electricity from a coal-fired power station rarely reflects the costs of the damage done by the acid rain it causes, or the health problems related to its pollution. These are real costs. It has been estimated that every ton of sulfur dioxide emitted into the atmosphere in the United States causes more than \$3,000 worth of health-related damage in affected communities (Webster 1994). Thus the sulfur dioxide emissions from mid-western coal-fired power plants cost society nearly \$25 billion per year. This figure is merely a rough guess, but it is clear that real money is involved and that someone must pay these costs, which have traditionally been "external" to the financial considerations of the utilities.

There appears to be an inevitable move toward more internalization of costs. In late 1994, Britain's Royal Commission on Environmental Pollution recommended that the price of gasoline should double over the coming decade. It said the cost of driving a car must increase because at the moment "it does not reflect the damage done to health and the environment" (Royal Commission on Environmental Pollution 1994). The Commission even suggested that new technology be used that would allow fuel pumps to "read" a car's technical data, so that a motorist driving a highly polluting car would pay more at the pump for its fuel.

As early as 1972, OECD members agreed to the polluter pays principle (PPP), which says simply that polluters should bear the full costs of any damage caused by their production of goods and services. The principle, though ever more widely accepted, has been unevenly applied. Indeed, governments even subsidize many forms of environmental damage, such as the overuse and misuse of water, energy, pesticides, and fertilizer. In early 1994, the German government renewed until the end of the century its subsidies for coal, which had been due to expire in 1995 (Dempsey 1995).

The BCSD has endorsed PPP and the notion of internalizing environmental costs. The Council wrote in its 1992 book, *Changing Course*, that "the cornerstone of sustainable development is a system of open, competitive markets in which prices are made to reflect the costs of environmental as well as other resources" (Schmidheiny with the BCSD 1992).

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The Council went on to endorse the idea of a greater use of economic instruments as a way of achieving these goals. Traditionally, governments' main tool for achieving environmental goals has been command-and-control regulations; these often tell a company precisely what technology to use and precisely what can be emitted and in what quantities. There will always be a need for such restrictions in situations where major risks and uncertainties exist. Yet environmental goals may also be achieved through economic instruments such as taxes, charges, and tradable permits. Properly applied, such instruments can help meet four needs: "to provide incentives for continuous improvements and continuous rewards, to use markets more effectively in achieving environmental objectives, to find more cost-effective ways for both government and industry to achieve these same objectives, and to move from pollution control to pollution prevention," according to *Changing Course*.

A regulation requires a company to reach a certain standard and then do no more. A tax or charge on pollution or resource use encourages a company to become ever more eco-efficient by producing a steady effect on that company's profit and loss figures.

There is a growing consensus that the use of economic instruments is increasing and that—if the instruments are well constructed and combined well with other approaches—this is a good thing.

"One example of new approaches to environmental management is the increasing use in recent years of market-based instruments such as pollution charges, or user fees and taxes on environmental goods and services," noted a 1995 UN Environment Programme report (Vaughan 1995). "The concept of using economic instruments to solve environmental problems is compelling: unless the pricing and market failures associated with environmental degradation are tackled, environmental policy will continue to work on the insufficient level of addressing the symptoms of environmental problems, without addressing the economic causes."

"Market based instruments are best in principle and often in practice," wrote the World Bank in 1992. "Most now agree that market based instruments have been under-utilized. They are particularly promising for developing countries, which cannot afford to incur the unnecessary extra costs of less flexible instruments that have been borne by OECD countries."

Business seems to agree. "Making market forces work to protect and improve the quality of the environment-with the help of performance-based standards and the judicious use of economic instruments in a harmonious regulatory framework-is one of the greatest opportunities that the world faces in this decade," wrote the International Chamber of Commerce in 1992.

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Another “internalizing” activity is being carried out at both national and international levels as governments experiment with ways of making national accounts better reflect environmental reality. Standard national accounts (SNAs) follow internationally agreed rules so that they are comparable. Yet it has long been recognized that such activities as spending money on cleaning up pollution or treating people with illnesses caused by pollution increases GNP, and a growing GNP is often mistaken for “progress.”

Money earned from harvesting natural resources also adds to the GNP, yet there is no accounting for the depletion of those resources, such as oil, timber, water, or topsoil. This approach should seem odd to anyone who thinks about it. It is like a person estimating how prosperous he or she is by looking only at income, not at net worth, not at assets such as a home or savings. It is perfectly possible to increase your income by selling off assets, but it is usually done only after careful consideration. Yet through such accounting devices as GNP, countries estimate how well off they are without considering how fast they are ploughing through key resources.

Individual countries such as Norway, France, and Japan have experimented with new forms of national accounting that get around some of these faults. The United Nations, which is the main standards body for SNAs, is also working on a new system of national accounting (Colitt 1994). To change these accounts will require governments to seek from companies ever more information on resource use and pollution. These revelations may have an effect on how customers value some companies, and in turn on how they are valued by the financial markets.

Another idea whose time seems to be coming is that of a “tax shift.” Again, the basic idea is simple: move away from taxing, and therefore discouraging, good things such as employment and the creation of capital, and move toward taxing, and discouraging, pollution and the misuse of resources. In reality it is extremely difficult to tax the misuse of resources without taxing their use in general. The political Right argues that raising taxes on such things as fossil fuels, or even on the carbon they emit, would be bad for the economy. The Left argues that it would be bad for the relatively poor, who usually spend a higher proportion of their income than the wealthy on heating their homes and fueling their cars. Those in favor of a tax shift maintain that it is possible to devise a system that benefits the economy and the environment without overtaxing the poor.

One fact probably sums up the reason why more and more political and business leaders are willing to discuss, and even promote, the idea of a tax shift: widespread unemployment. The envi-

*Another “internalizing” activity is being carried out at both national and international levels as governments experiment with ways of making national accounts better reflect environmental reality. It has long been recognized that such activities as spending money on cleaning up pollution or treating people with illnesses caused by pollution increases GNP, and a growing GNP is often mistaken for progress.*

ronment topped German opinion polls through the eighties as the main issue of concern. By late 1994 it had fallen to third; crime was second, and unemployment first. Germany taxes employment harder than most countries, but such rates are high throughout Europe. It was with the aim of decreasing unemployment that former European Union head Jacques Delors—not known as an environmental or any other type of radical—called for a shift from employment tax to resource tax (Day 1994).

BCSD members could not bring themselves in 1992 to support the idea, partly because of its novelty and partly because of suspicion that any resource/pollution tax would be an add-on and not a shift. Changing Course insists on revenue neutrality: any new pollution tax must be balanced by a decrease in another tax.

Yet a 1994 BCSD report called on governments to adopt a number of national sustainable development strategies incorporating “new and flexible market based approaches,” including “a tax shift away from labour and investment to value-depleting activities such as pollution and the inefficient use of environmental resources” (de Andraca and McCready 1994).

Tax shifts have been talked about—and so far defeated—in both the United States and the European Union. But there is a widespread feeling that they are inevitable. If other CEOs change their minds as quickly as many of those who belong to the WBCSD have, then a tax shift may be a reality in much of the world by the turn of the century or soon after.

*Tax shifts may be inevitable as well. Again, the basic idea is simple: move away from taxing good things, like employment and the creation of capital, and move toward taxing pollution and the misuse of resources. In reality, it is extremely difficult to tax the misuse of resources without taxing their use in general.*

## ALL THIS...AND THE FINANCIAL MARKETS

Imagine for a moment that the majority of environmental costs are internalized so that they are borne by companies and passed along to consumers. Imagine that governments make greater use of economic instruments to reward continuously companies that are becoming increasingly more eco-efficient, while punishing those that are not. Imagine that growing numbers of governments revise national accounting systems to reflect environmental damage and resource depletion accurately. Finally, imagine tax shifts toward the discouragement of pollution and resource overuse.

Then it is not hard to imagine that the balance sheets of companies would also change strikingly. Whole business sectors would change the ways in which they do business.

As these changes occurred, the financial markets would change the basis on which they decide whether to invest in, lend to, and insure companies. Financial markets would not have to care about “the environment”; they could assume that if a company were finan-

cially successful in a world of internalized environmental costs and taxes on pollution, then it must also be eco-efficient.

This is not going to happen quickly. In fact, it would be a mistake if such a complex set of changes were pushed along too fast. Business in general and the WBCSD in particular want to see a gradual, scheduled, predictable introduction of changes to allow business time to plan and adapt.

The various trends outlined here—internalizing environmental costs, greater use of economic instruments, new national accounts, new bases of taxation, new attention to financial markets by “the greens”—are clearly in the direction society is moving. The more forward-looking firms are investing in eco-efficiency, and then joining groups calling for more economic instruments and the internalizing of environmental costs so that their investments will pay off sooner in financial terms.

Change will, as always in major societal shifts, accelerate and decelerate and will occur faster in some places and some business sectors than in others. But businesses that do not keep up with such changes will suffer. So, too, will the lagging players in the financial community. They will become more prone to risk and liabilities, and they will miss opportunities as they fail to see closer links between environmental quality and financial quality.

We worried at the beginning of this article that the workings of the financial markets encourage short-termism. But managers of pension funds are today making equity investments on behalf of people who will not collect the benefits for decades. It is quite probable that these trends will have shifted the bottom lines of many businesses considerably within a single decade. That is why the more progressive actors in the financial markets will begin to consider the implications of sustainable development now, rather than waiting for these implications to be forced on them by changes in fiscal, legal, and business realities.

“In a way, it is not even much of a stretch,” wrote Richard House in *Institutional Investor* (1995). “If you believe in the advance of free markets, and you acknowledge that economic activity has environmental costs for which business is increasingly (if imperfectly) being held accountable, doesn’t it seem likely that the financial markets will begin to systematically consider those costs when they value businesses? For acquisitions, this is already standard practice.”

*“If you believe in the advance of free markets, and you acknowledge that economic activity has environmental costs for which business is increasingly being held accountable, doesn’t it seem likely that the financial markets will begin to systematically consider those costs when they value businesses?” (House 1995)*



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#### STEPHAN SCHMIDHEINY

Stephan Schmidheiny, Chairman of ANOVA Holding Ltd., is one of the most active and enlightened business leaders in the world today. His pro-active leadership role in the business community, with the purpose of making that community more responsive, is exemplary. He served as chief adviser on business and industry to the 1992 Earth Summit. His contributions to the efforts to attain sustainable development are surpassed by none. In addition to *Changing Course*, he is also co-author of *Towards an Ecologically Sustainable Growth Society: Physical Foundations, Economic Transitions, and Political Constraints*.

#### FEDERICO J. L. ZORRAQUIN

Federico J. L. Zorraquin is President of the Group S.A. Garovaglio y Zorraquin, and is a member of the World Business Council on Sustainable Development.

## **Sustainable Development and the Private Sector: A Financial Institution Perspective**

L. Enrique Garcia

President and Chief Executive Officer of the Corporacion Andina de Fomento (CAF)

### **Abstract**

Corporacion Andina de Fomento (CAF) is a multilateral financial institution which supports the sustainable development and integration efforts of its shareholder countries of the Latin American region. Its shareholder countries include Bolivia, Colombia, Ecuador, Peru, Venezuela, Brazil, Chile, Mexico, Paraguay, and Trinidad and Tobago. Shares of CAF are also held by 22 private banks in the region. CAF serves the public and private sectors, providing multiple financial services to a wide variety of customers, ranging from member states to corporations and financial institutions. Social and environmental considerations are incorporated into its managerial policies, and it includes in its operations eco-efficiency and sustainability criteria. As a financial intermediary, it attracts resources from industrialized countries to Latin America, serving as a bridge between the international capital markets and the region, as well as promoting investments in business opportunities. CAF's total assets were \$3.4 billion in 1996. The present article presents CAF's approach toward sustainable development and eco-efficiency as the pillars that guide its operations. It also presents examples of the projects that are currently being undertaken with the private sector. Based on these experiences, the article presents some important insights on the role of the private sector in the region's sustainable development and on the importance of the need to build strong bridges between the public and the private sector in the region.

## **THE CHANGING ROLES OF GOVERNMENT AND THE PRIVATE SECTOR**

The wave of economic and political reforms that has spread across Latin America over the past few years has transformed the economic and political landscape. With democracy reigning in the region, most countries have opted for economic policies increasingly based on market solutions to the problems of resource allocation and economic growth.

Prior to these reforms, a number of economic activities, now more efficiently performed by the private sector, were either in the hands of the public sector or heavily regulated by it. Over the last decade, most countries have abandoned their inward-oriented import substitution regimes of the earlier period for macro-economic return combined with outward looking policies. Although there were differences in the way that these reforms were applied, most countries went through a significant reform period. Most of these reforms were of the "first generation" type—fiscal and monetary discipline, trade reform, financial sector reform, and privatization. They were driven by the need for economic stability as the foundation of economic growth and by the common philosophy that private sector activity had to be the primary source of wealth generation.

The shift from relying on the state for decisions about the allocation of resources to one where the markets were expected to perform this task makes it imperative for us to examine the factors that make market systems function more efficiently. This has required a closer look and a greater reliance on “second generation” reforms.

The “second generation” reforms are necessary to ensure that resources that are idled by the change in incentive policies move into activities with long term potential. The success of this set of reforms is largely related to institutional structures—the legal environments and property rights already in place. Improving institutions and strengthening the capabilities of the public and the private sectors in the drive for more sustainable development is, therefore, central to these reforms. This includes building the mechanisms by which the partnerships and sharing of responsibilities between the public and the private sectors become the core of the sustainable development efforts of countries.

The region faces new challenges in addressing the second generation of private sector development issues. Focusing efforts on reforms that include strengthening institutions, property rights, efficient use of natural resources, the contracting environment, and education and health will have a far higher payoff in promoting sustainable development than direct resource allocation (Holden, in preparation).

Efficiency, enhanced productivity, and world-wide based markets demand competition, technology transfer, strategic alliances, and investment that can be performed more dynamically by the private sector. While the public sector moves away from the productive sectors and the private sector plays a more active role in shaping the development path of countries, there is also a shift in the assumption of social and environmental responsibilities. On one hand, public investment needs to concentrate on solving social needs and human capital growth, as well as infrastructure related to production and other public goods and services. On the other hand, the private sector needs to incorporate environmental and social concerns in their growing activities. In this new context, sustainable development as a future for the planet should be the objective of the private sector. However, this objective cannot be realized if there is no profitability.

One of the objectives of CAF is to work together with its clients to achieve a more pro-active approach towards sustainable development, one where the private sector can play a crucial supporting role in the region. Following is a brief presentation of the thrust of CAF in seeking these objectives.

*“First generation reforms”—fiscal and monetary discipline, trade reform, financial sector reform, and privatization—were driven by the need for economic stability as the foundation of economic growth. “Second generation” reforms—factors that make market systems function more effectively—are necessary to ensure that resources move into activities with long term potential.*

## THE NEED FOR A MORE PRO-ACTIVE APPROACH TOWARD THE ENVIRONMENT

The first step in this direction has been to work with the private sector to change the perception that externalities, including social and environmental responsibilities, are the exclusive responsibility of government. Working together with its clients, CAF is slowly replacing the long-held concept that the environment is a hindrance to the development process with the notion that the environment is actually a promoter and propeller of sustainable development. After many years of viewing the environment and its proponents in a confrontational manner, where sanctions and regulations appeared to be the rule, CAF is promoting a working environment where both government and business can work together to promote both the role of business in the region and a pro-active approach toward the environment.

CAF's new environmental focus is to transform the traditional question, "What can we do to protect the environment?" to "How can environmental protection promote development?" This new approach implies a shift from one of protectionism towards one where the focus is environmental management. CAF's goal is to promote this new sustainability approach with all of its clients, including financial intermediaries. With this new approach, responses to development are much more oriented toward supporting innovation and toward transforming potential negative impacts into opportunities. This new concept also promotes competitiveness and increased productivity.

*Working with its clients, CAF is slowly replacing the long-held concept that environment is a hindrance to development with the notion that the environment is actually a promoter and propeller of sustainable development.*

Table I From a Protectionist Approach to a Management Approach

Protectionist approach	Management approach
How can development be protective of the environment?	How can environmental protection promote development?
<ul style="list-style-type: none"> <li>• Environmental protection is the objective</li> <li>• Development is the potential aggressor</li> </ul>	<ul style="list-style-type: none"> <li>• Environmental protection is the means to objectives</li> <li>• Sustainable development is the objective</li> </ul>
Fiscal response	Innovative response
<ul style="list-style-type: none"> <li>• Delegates and subcontracts to third parties</li> <li>• Interventions made after decisions taken</li> <li>• Efforts focused on making declarations and centered on a diagnosis</li> </ul>	<ul style="list-style-type: none"> <li>• Innovates with management criteria, internally</li> <li>• Interventions made at conception of project</li> <li>• Efforts oriented towards action and focusing on strategic approaches</li> </ul>
Impacts = threats	Impacts = opportunities
<ul style="list-style-type: none"> <li>• Imposes sanctions and regulations</li> <li>• Adds components and costs</li> </ul>	<ul style="list-style-type: none"> <li>• Promotes initiatives and creativity</li> <li>• Increases efficiency and productivity</li> <li>• Promotes competitiveness</li> </ul>

CAF's environmental guidelines are driven by the principles enunciated in the table above. CAF has adopted an approach which integrates economic, social, and environmental factors as a way to achieve greater efficiency, greater profitability, and greater quality of products and services in the projects that it promotes. In doing so, CAF promotes the concept of eco-efficiency which is based on economic as well as ecological efficiency. With CAF's assistance, the private sector in the region is encouraged to adopt approaches which maximize value-added while minimizing resource consumption, waste, and pollution. The concept of eco-efficiency also encourages making the right technological, as well as the right investment, decisions. In order to become more eco-efficient, companies are also encouraged to internalize environmental costs and to reflect real value.

#### THE NEED FOR UNDERSTANDING BALANCES

Growth will not occur without capital accumulation. We know, however, that there are several kinds of capital. While the physical and financial forms of capital have been widely understood, other forms of capital—the human, the natural, the institutional, and the cultural—are less well understood and taken into account less in decision making. But progress is being made. There is now, for example, more recognition that there is a need to take into account factors such as depletion of natural resources. Human capital is becoming central to many discussions. Cultural and institutional capital questions are also arising as countries and individuals make choices and select different mechanisms in their efforts to attain sustainable development.

Much progress has been made in the effort to incorporate these various forms of capital in definitions of sustainable development. The United Nations Development Programme (UNDP) has offered a broader definition of development which incorporates these various forms of capital. It has also offered a human development index which includes factors such as education, freedom, and health. The World Bank has tried to come up with a new calculation for the wealth of nations which includes produced assets (man-made capital), natural capital (land, water, forests, and subsoil assets), and a valuation of human resources.

These novel attempts notwithstanding, we still lack a credible and operational definition of sustainable development, mainly because of the lack of consensus on a method to value human and natural forms of capital. The inter-temporal denotation of meeting the needs of both present and future generations requires us to think more seriously in the long term, to agree on how we would value the

*While the physical and financial forms of capital are widely understood, the other forms of capital—human, natural, institutional, and cultural—are less well understood and taken into account less in decision making.*

future, and to understand the inter-temporal nature of the various forms of capital.

The question is: How much and how fast do we have to grow in order to adequately meet the needs of present and future populations? The more we take the short term view, the more we have to accept trade-offs. The gap between the short term view of producing capital and the long term view of maintaining a balance among the various forms of capital is the challenge for present generations. This challenge can only be addressed by recognizing that sustainable development will only be achieved if there is a balance attained in all the various forms of capital, and that each type of capital plays an important role in the effort to achieve sustainability.

The mix of forms of capital and, therefore, the accumulation process are central. It is also central to recall that there could be substitution and complementarities across all forms of capital. China, for example, has human capital that has been transformed into financial capital. Venezuela is endowed with natural capital that has been transformed into financial capital.

What types of investments should countries encourage in order to enhance balance across sectors? How should countries invest their financial capital for this purpose? Is the actual substitution of natural capital with respect to other forms of capital infinite? To what level should countries accept depletion of their natural resources as a way to accumulate other forms of capital? How is the accumulation of financial capital being shared among the population?

Unfortunately, there is not one correct answer to these questions. There is no such thing as the correct formula to lead us to sustainable development, which can be applied to all situations. There is no exact estimate of the financial resources required to put the world on a sustainable development path. To achieve a balance among all forms of capital, different countries, different communities, and different situations will require different approaches.

Financial institutions have the opportunity to seek a balance through their analysis of operations. From its conception, any operation can be measured by how much it maintains a balance in economic, financial, institutional, social, and environmental feasibility. If all variables are given equal weight and importance, and if the clients accept and understand that this balance is required, then there is a better chance for fulfilling sustainability.

CAF follows these principles in each one of its operations. CAF also believes in promoting these concepts through the leaders in the region. For this purpose, CAF has organized a series of dialogues with leaders in the Andean region, in order to reinforce the need to

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incorporate sustainable development concepts at the highest levels of the decision-making process. CAF was an important actor and supporter of the recent Summit on Sustainable Development that was held in Santa Cruz, Bolivia, where Presidents and other leaders of the region agreed on the priorities for attaining sustainability in the region.

#### THE NEED FOR A NEW SOCIAL APPROACH

Increased income growth is the prerequisite to increased investments in the various types of capital. Growth alone, however, is not sufficient. Empirical evidence in Latin America shows that the poorest segments of society are totally marginalized from the economy of the region. The gap between the rich and the poor in Latin America has increased dramatically in the past decade and the region's growth rate is insufficient to reduce the absolute number of poor. Furthermore, if the current rate of growth continues, two more people will fall into poverty each minute during the next decade (Londono 1996, and estimates of the Inter-American Development Bank). Talk of sustainable development in the region is fruitless unless we find a way to "de-marginalize" this segment of the population.

Given this context, we strongly believe that financing sustainable development should begin by investing in people: by investing in education, by financing microenterprises, and by promoting social responsibility.

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#### **Investing in education**

Unfortunately, expenditures in education in Latin America have decreased in the last decade. Expenditures per student in primary school have gone down from \$164 to \$118. According to statistics, more than 50% of the children that enter public schools never finish primary school. What is worse, the quality of education is reported to have deteriorated, and investments in the sector have gone down. We worry about these trends and how they will affect and jeopardize the chances of our future generations to survive in a competitive and changing world.

#### **Financing microenterprises**

Fifty percent of the employable population in Latin America is employed by the so-called "informal sector." Yet, many of the institutions of the region cater mainly to the formal sector. Financing micro-enterprise development could represent one of the most important bridges between the formal and the informal sectors and



a viable alternative for millions of the working poor of the region and their families. Bridging the gap between these economic and social sectors could be the best way to promote equity and assure sustainability. We, therefore, strongly believe that investments in microfinance services (credit and savings) should be on the top of our region's agenda.

It is for this purpose that CAF has created an office for the Development of Microenterprise through which resources are channeled to support microenterprise development in the region. CAF's goal is to increase and improve the financial and non-financial service options that are currently available to this sector.

#### **Promoting social responsibility**

The gap between the rich and the poor will continue to exist unless society and, particularly, the private sector—which creates the opportunities for livelihood for most of the population in the region—assume more social responsibility. It is in the interest of everyone to raise the standard of living in the region. Without it, there is no possibility of private sector or economic growth.

Efficient, competitive, and productive industries are necessary to economic growth. In the short term, competitive and productive industries, with well qualified human resources that assume social responsibilities, should be the ones to be promoted and supported.

Competitiveness at the firm level has emerged as a preeminent issue in many nations. In most countries, this competitiveness is intimately related to the way that resources are deployed, the efficiency with which they are used, and the capacity of industry to innovate and create value-added in order to succeed in national and international markets. But being eco-efficient at the firm level is only one part of the overall picture of eco-efficiency. It is also about promoting innovation and capacity building of human resources; it is about employment and income generation; and it is about promoting the right technologies. This more complete vision of the role of the private sector, therefore, includes economic and human dimensions that are essential to sustainable development.

The socially responsible firm does not save on people. Instead, in a pro-active manner, it makes its best efforts to have adequately paid, well trained and educated employees. The socially responsible firm recognizes that having healthy and satisfied employees and good relations with the community will have much higher payoffs for sustainable development than a firm that does not invest in its people.

The new guidelines for CAF's operations call for greater attention to be paid to issues of social responsibility. The objective is to

*The gap between rich and poor has increased dramatically in the past decade and will continue to increase unless society and, particularly, the private sector assume more social responsibility. Being eco-efficient at the firm level is also about the capacity building of human resources.*

formulate, together with clients, a strategy which invests in people as a way to reach higher levels of eco-efficiency.

## CASE STUDIES OF ECO-EFFICIENCY AND SUSTAINABLE DEVELOPMENT

It has been the interest of CAF to promote, together with its shareholders, innovative projects which contribute to eco-efficiency and sustainable development. Following are some examples of these efforts.

### CREDIT LINES FOR ENVIRONMENTAL RECONVERSION

Competitiveness and open markets are becoming the best allies of sustainable development and eco-efficiency. Only those enterprises that make efficient use of natural resources with better technologies, healthier, more secure environments, and better productivity will be able to compete in the global market. It was within this context that CAF saw the need for financial mechanisms which could provide the industrial sector with easily accessible environmental reconversion credits.

Before establishing these reconversion credits, CAF commissioned a study in Colombia to determine whether private industry was interested and willing to invest in environmental reconversion. The study was carried out in five different industrial regions of Colombia, and it covered a wide range of industries. The study focused on the highest levels of decision making of each industry and on the relation of their investment decisions to environmental concerns—past, present, and future. The study also addressed the motivation, incentives, and requirements of these investments. The study was undertaken during the good economic years of 1994 and 1995 in Colombia. The results were to a great extent quite surprising. Not only had many companies already invested in environmental reconversion, but those that had not yet done so were interested in and willing to make investments in this area. The motivation for their decision or desire to invest in environmental reconversion varied from those that saw this as a good way to reach more efficient production, to those that simply saw this as a way to ensure that they would comply with the environmental regulations, and those that saw it as a good way to improve their image.

Based on the encouraging results of the study in Colombia, CAF proceeded to approve a \$100 million credit line for Environmental Reconversion. Loans are channeled through Colombia's industrial development institute, IFI. Given its character and objectives, this credit line is unique in Latin America. Through long-term financing, this credit program is supporting the replacement of present tech-

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nologies with ones that are more efficient, safer for human health, and less polluting. This credit program is also being seen as improving the level of competitiveness of industries faced with an opening economy, while at the same time helping industries to comply with the environmental laws of Colombia.

Following the study of Colombia, a study was later undertaken in Venezuela. In contrast to Colombia, industries in Venezuela showed less interest in investing in this area. In contrast to Colombia, the study was undertaken during a difficult economic period in the country, in 1995. The economic situation notwithstanding, the study concluded that most of the industries surveyed did not have environmental reconversion as one of their priorities. Given its commitment to environmental reconversion, CAF proceeded, nevertheless, to make credit available to those industries interested in making this type of investment, including companies such as PDVSA, VENEPAL, and a few others that are committed to environmental reconversion. CAF has decided to revisit the study once the economic situation in the country improves.

A third study was undertaken in Peru. Here the results have been more encouraging, and it is CAF's intention to have a project along the lines of Colombia's.

#### RECYCLING AND PURIFICATION OF THE WATER OF LAKE MARACAIBO, VENEZUELA

The objective of this project is to process and treat the waste water of the Northern part of the Maracaibo Lake for re-use in the Tablazo Petrochemical complex. CAF has provided a \$60 million loan for this purpose to the Government of Venezuela. The executive agency for this project is the Instituto Para el Control y la Conservacion de la Cuenca del Lago de Maracaibo (ICLAM). Based on a partnership between the government and industry, this project will reverse the contamination of the Maracaibo Lake through the treatment and re-use of 1,300 liters of waste water. The project, using the latest technologies, offers not only an alternative to dumping untreated water into the lake but also offers a solution to the water needs of the petrochemical complex. This is a clear example of a project which maximizes the protection of natural resources and the environment while at the same time offering the means to improve the quality, efficiency, and profitability of the private sector.

#### AURIFEROUS MINING PROJECT : LAS CRISTINAS (VENEZUELA)

CAF will provide a \$50 million loan to Minera Las Cristinas (MINCA) for the purpose of mining the largest gold deposits ever discovered in Venezuela and one of the ten largest in the world.

MINCA is a joint venture of Corporacion Venezolana de Guayana (CVG) and Placer Dome of Venezuela. Based in the State of Bolivar, this project has environmental provisions ranging from rehabilitation to clean technology, as well as a wide ranging social program.

Since the 1960s, this mining area had been exploited by small prospectors (“garimpeiros”) who had little concern for the environment and who had been causing environmental havoc in the region. Social conflicts were rampant. It will be the responsibility of MINCA to rehabilitate the environment and to establish a clean and efficient mining operation. Placer Dome, on the other hand, has the responsibility of developing the foundations that will permit the project to be implemented in a way that would take into account the welfare of the communities of the area and the improvement of their quality of life. The estimated cost of the project is \$500 million, of which \$60 million will be invested in environmental and social activities.

#### THE BOLIVIA-BRAZIL GAS PIPELINE

The objective of this project is to contribute to the integration of the Latin American energy network through the expansion of Bolivian gas distribution to Southern Brazil. The project covers a 3,100 km length of pipeline from Santa Cruz, in Bolivia, to Puerto Suarez, in Brazil. It is expected to provide a cleaner, safer, and more efficient source of energy for industry. The Bolivia-Brazil gas pipeline has been chosen by the international organizations involved in the follow-up to the Santa Cruz Summit on Sustainable Development, under the coordination of the Organization of American States (OAS) as a case study of an infrastructure project that will be developed in line with the Santa Cruz mandates.

Environmental and social activities have been incorporated from the inception of the project in order to minimize negative environmental and social impacts. Our environmental and social plans will be incorporated as part and parcel of project implementation in both countries.

The project involves the participation of both private partners—Shell and Enron—and public sector partners such as Petrobras. It involves two countries and four international agencies that are willing to finance the venture: the World Bank, the Inter-American Bank, the International Finance Corporation, and CAF. For the first time for these institutions, a joint environmental team has been established to coordinate the environmental studies and to ensure a sustainable development approach for the project.

## CONCLUSION: THE NEED FOR A COMMON VISION

Attaining sustainable development will require a thorough transformation of attitudes and an acceptance that responsibilities will have to be shared. This will require close partnership between government, business, and financial institutions. Through this partnership, all actors can encourage the adoption of eco-efficient principles which balance environmental, social, and economic factors for the good of society. It is only through this balance that sustainable development will be achieved.

Taking this important step will not be easy. Much work and effort needs to be made to take away the preconceptions and to move to a new ideology of production and consumption for the region that is more supportive of sustainable development. Major efforts will be required to bring environmental, social, and natural resource concerns into the mainstream of macro-economic policy. Only a better dialogue between the public and the private sectors will help us achieve this.

Efforts must be made to promote better dialogue between decision-makers and political and business leaders. Much of big business is already committed to adopting more sustainable and eco-efficient modes of production (e.g. those belonging to the World Business Council for Sustainable Development). Efforts must now be made to have medium and small industry be ready to voluntarily do the same. Much of this could be facilitated through technical cooperation, technology transfer programs, financial credit availability, and access to information.

Globalization presents challenges as well as opportunities for industry in the region. The advantage of the "Green Market," the environmental requirements of emerging trade agreements, and the provisions of some of the environmental conventions such as the Montreal Protocol and the Biodiversity Convention are examples of some of these. The Latin American region cannot afford to wait to be affected negatively by environmental provisions of trade or international policy before it takes action. Instead, an intelligent compliance with international treaties, as well as up-to-date maintenance with the most innovative and environmentally effective technologies, will be advantages that can only benefit the private sector of the region.

The sustainable development path is a shared responsibility. As a financial institution, we welcome and encourage a closer partnership between the public and the private sectors as the only way to achieve sustainable development in the region.

*Effort will be required to bring environmental, social, and natural resource concerns into the mainstream of macroeconomic policy. Only a better dialogue between the public and private sectors will help us achieve this.*

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### L. ENRIQUE GARCIA

Before becoming President and CEO of Corporacion Andina de Fomento (CAF), Mr. Garcia served as Minister of Planning and Coordination and head of the Economic and Social Cabinet in his native Bolivia. Prior to that, Mr. Garcia had several senior positions in the Inter-American Development Bank, culminating in his appointment as Treasurer. He has held other senior positions, including as member of the Board of Directors of the Central Bank of Bolivia, and professor of Economics and Finance. He holds BS and MA degrees in Economics and did his doctoral studies at American University.

## *Section IV: The Emerging Record: Success Stories of Private Sector Leadership and Action*

This section presents a more detailed view of what is possible in public-private partnerships through several case studies and success stories. The examples provided here describe elements important for the success of private sector participation in sustainable development. The most consistent message throughout this section is that the best results of private sector contributions are in situations where there are strong partnerships between the private and public sectors.

## Business Progress Toward Sustainable Development

Stephan Schmidheiny, Rodney Chase, and Livio De Simone

Members of the Executive Committee of the World Business Council for Sustainable Development

### ABSTRACT

In the five years since the United Nations Conference on Environment and Development, business has made great progress toward finding ways of implementing the goal of sustainable development. While recognizing that society is still a very long way from achieving sustainable development, and that further progress will require contributions from all sectors of society, business has changed a great deal since the decades preceding the 1992 Rio Earth Summit, popularly known as UNCED. Given the important role of the private sector as a primary engine of economic growth and development, it is in everyone's interest that business be given the incentives, the encouragement, and the right frameworks to adapt and change in support of sustainable development.

### THE ROAD TO RIO

During the 1960s and 1970s, one group of activists championed the environment and another advocated the "development" of the poorer nations. Their messages often appeared contradictory: one group claimed that economic development should not be allowed to degrade the environment; the other argued that bits of the environment had to be sacrificed for the sake of development. Their messages often appeared simplistic to business people in industrialized countries. Environmentalists urged the business community to "save the planet" and talked of a nature and biodiversity that were "priceless." Much of the development lobby urged a sharing of wealth. These were not messages that business could easily relate to or act on, as there was little quantification; there was much talk of rights but little assigning of tasks or responsibilities.

The 1980s saw the refining of the concept of "sustainable development," most notably in the 1987 report of the World Commission on Environment and Development (known as the Brundtland Report) which defined it as progress that "meets the needs of the present without compromising the ability of future generations to meet their own needs." The phrase neatly brought together considerations of the material needs of the present and the future, of growing populations, and of requirements to conserve and pass along adequate environmental goods and services—including the vast amount of information contained in natural genetic diversity—to future generations.

A decade after the publication of the report (which called for the Earth Summit), the concept remains poorly defined, or perhaps over-defined in hundreds of different interpretations that now



compete for attention. But the term has had the effect of bringing environmental and developmental concerns together in a way that brought new actors into the debate. Business was one of those new actors. Concern for the “environment” had often cast business in the role of villain: the primary source of pollution and of the main misuse of resources.

Today, however, the countries in which business has been most successful in creating wealth for society are those most able to clean up pollution and manage resources. Developing nations can and must avoid the more polluting aspects of both the early Northern industrial revolution and the industrialization of the centrally-planned economies.

Concern for development also tended to cast big business as the villain, taking advantage of poor nations. But business and freer trade today offer successfully developing nations the opportunity to create the wealth and to obtain the technology and skills to manage their environments more efficiently.

Unlike the earlier environmentalism or developmentalism, sustainable development has several key roles for business. The Brundtland report called firmly for economic growth, but growth with a new technological and social content. In a world where millions remain in abject poverty and where the population is expected to at least double, any call for “no growth” is at best poorly informed, at worst cruel and inhumane.

As for technology, to give an example, it is clear that many of the world’s people need greater access to energy but it is not clear how much of this can safely be derived from carbon-based fuels. Given the right market signals, business will provide new energy technologies. Business remains the primary producer of the innovation required by the concept of sustainable development. Government policies, pressure from NGOs, and consumer choices can all catalyze this innovation through market mechanisms and by introducing the right framework conditions.

As for social change, the Brundtland report called for equity of opportunity. Given the right legal and social frameworks—access to education, human rights, property rights—business can help provide opportunities for anyone to earn enough to live in dignity and in harmony with the environment.

Another requirement for sustainable development is basic efficiency—getting as much added value as possible with as little input as necessary of energy and natural resources, while producing little waste, especially in the form of pollution. Given the right signals—from government in terms of reducing wasteful subsidies and properly costing resources and pollution sinks, and from society in terms

*Concern for the environment had often cast business in the role of villain, polluting and misusing resources; concern for development had also tended to cast business as the villain, taking advantage of poor nations. Today, countries where business has created wealth are those most able to cleanup pollution and manage resources.*

of a preference for “eco-efficiently” produced goods and services—business will respond via market mechanisms and improve its eco-efficiency.

The Earth Summit became the first major global conference with strong business attendance, partly because business was ready for sustainable development, and partly because governments and many NGOs now recognize the essential role of business in debating these issues and indeed its comparative advantage in moving forward.

### THE PROGRESS OF BUSINESS IN PROMOTING SUSTAINABLE DEVELOPMENT

How much progress business is making in promoting sustainable development is difficult to measure with any quantifiable certainty for several reasons. First, business is a collection of activities covering a vast spectrum of size and type. Second, surprisingly little progress has been made in the development of “sustainability indicators” for business, or government, or any other type of activity. Third, it is hard to decide a time frame over which progress should be judged.

Business started being more concerned with environmental and social issues well before the Earth Summit. Rio spurred that progress, but unevenly. The Earth Summit occurred just as many centralized market economies began freeing up and opening up their markets. These countries have been forced to define their version of market economics at the same time as they explain their notions of sustainable development. Thus it is possible for equally rational observers to be deeply impressed by the great progress of business or deeply critical of the disappointing progress made.

Rio did offer business and all other actors a route map for progress in the form of Agenda 21. However, this large document lacks priorities and has far more to say to governments than to business. Thus different enterprises and different sectors of business have had to set their own priorities, responding to their perceptions of their own positions and of market, social, and policy realities.

The WBCSD has collected evidence, mostly from its membership, which indicates some “signals of change.” These signals add up to an identifiable change of course—a paradigm shift—away from a fractured view of environment and development issues, to a holistic view of business and sustainable development.

More specifically, it involves shifts from:

- Seeing only costs and difficulties in the concept of sustainable development to seeing savings and opportunities.

*The vast spectrum of size and type in the realm of business, limited progress in the development of “sustainability indicators,” and the problem of establishing time horizons for assessing progress—all these factors make it hard to measure how much progress business is making in promoting sustainable development.*

- End-of-pipe approaches to pollution to the use of cleaner, more efficient technology throughout entire production systems, and further, to seeing sustainable development as integral to business development.
- Linear, “through-put” thinking and approaches to systems and recycling approaches.
- Seeing environment and social issues as responsibilities only for technical departments or experts to seeing these issues as company-wide responsibilities.
- A starting premise of confidentiality to one of openness and transparency.
- Narrow lobbying to open discussion with stakeholders.

These shifts are occurring at different speeds in different places, but they are all happening. One good example of such a “signal of change” is the newly developed concept of “eco-efficiency.” This is a management approach developed by the WBCSD designed to help companies support sustainable development. It has been taken up by many corporations and business schools and is one of the defining principles utilized by a new investment fund. Narrowly defined, “eco-efficiency” is about producing more with fewer resources and less pollution. But it goes further and encourages business to become more competitive, more innovative, more environmentally responsible.

Eco-efficiency calls on business to:

- Reduce the material intensity of goods and services.
- Reduce the energy intensity of goods and services.
- Reduce toxic dispersion.
- Enhance material recyclability.
- Maximize sustainable use of renewable resources.
- Extend product durability.
- Increase the service intensity of goods and services.

Eco-efficiency encourages action by allowing business to adapt to new ways of working without immediately abandoning its traditional practices. Furthermore, the philosophy harnesses the business concept of value creation and links it to the environment. The goal is to create value for society and the company, by doing more with less over a product or service life cycle. In the formal definition of the concept, as developed by the WBCSD, eco-efficiency is reached by the delivery of competitively priced goods and services that satisfy human needs and bring quality of life, while progressively reducing ecological impacts and resource intensity throughout the life cycle, to a level in line with the earth's estimated carrying capacity.

### THE ROAD AHEAD

There is a lively global debate today about how various sectors of society are, or should be, changing. Governments, the negative view runs, are losing power and a clear vision of their legitimate roles. The more positive view is that governments are correctly withdrawing from areas where others, such as civil society and business, can and do perform required functions better.

Negatively viewed, business is swashbuckling around the globe largely uncontrolled by weakening governments. A more positive view holds that business, through freer trade, is spreading the technologies, skills, and processes required for development and, given the right global frameworks, for more sustainable development.

Amid this confusion, there is a tendency among governments, environment/social NGOs, and the media to call on business to do everything: create wealth and jobs, clean up the environment, deliver "development," satisfy all stakeholders, fight corruption, educate, provide health care, and generally stabilize and improve society. Obviously business cannot do all these things, though business can find, and perhaps should be looking harder for, its appropriate role in each of these activities. But one thing is certain: a business that is not profitable over time ceases to exist, and thus is no longer a player in the issues listed above, or in any other issues. So in this sense, competitiveness in the marketplace must be a first concern of any business. It is for precisely this reason that the more farsighted businesses are taking an interest in sustainable development.

*There is a tendency among governments, environmental/social NGO's, and the media to call on business to do everything—create wealth and jobs, clean up the environment, deliver "development," satisfy all stakeholders, fight corruption, educate, provide health care, and generally stabilize and improve society. Business can find, and perhaps should be looking harder for, its appropriate role in each of these activities.*

### TRENDS TOWARD SUSTAINABLE DEVELOPMENT

Several trends suggest that business will pay more and more attention to the sustainable development agenda to remain competitive. These trends are stronger or weaker in various parts of the

world and in various business sectors. None taken alone is totally convincing, but the length and breadth of the list makes compelling reading for a thoughtful chief executive:

- Environmental regulations are getting tougher, and so is enforcement; in some countries chief executives face jail sentences for willful pollution damage.
- Cutting waste and using natural resources more efficiently can save costs and boost profits.
- Some governments are providing opportunities for business to avoid costly and innovation-stifling bureaucracy by encouraging self-regulation and pacts with government agencies, rather than new environmental laws.
- More is being made of appropriate economic instruments (tradeable pollution permits, charges, and taxes) to encourage continual improvements.
- Environmental groups and businesses are working together more to find solutions.
- Banks, concerned about their own legal liabilities and by borrowers' possible difficulties in repaying loans if they face large pollution clean-up bills or fines, are looking more closely at borrowing companies' eco-efficiency records.
- Insurers, themselves suffering huge pay-outs for past pollution damage by companies they have insured, are also taking a closer look at the eco-efficiency performance of companies seeking insurance.
- More investors are becoming interested in investing in environmentally responsible companies and non-polluting technologies.
- The best and brightest people are more willing to work for environmentally responsible companies.
- The public is using its buying power to encourage business toward fulfilling environmental and social responsibilities.

The last trend raises the issue of “green hypocrisy” on the part of companies pretending to be more environmentally and socially responsible than they are. There will always be this sort of offender, but the more sophisticated companies see this approach as not only wrong, but also dangerous. Both media and consumers are becoming too sophisticated to allow companies to pretend; they expect real corporate action.

Overall, the list of trends reveals a greater focus on the environmental side of sustainability than on the social side. This is partly because society as a whole has focused more on the environmental side; and it is partly because, controversial as they remain, business’ environmental responsibilities are clearer than their social ones. The balance is shifting slightly, however. Consumers are taking more interest in how companies treat their employees—those from minorities and other categories of vulnerable workers—and their neighbors. The BCSD-Latin America is, for example, planning a major study of business’ social responsibility.

Another obvious point about this list is that the pace of change is strongly influenced by the extent of the political and societal will to encourage change. Emerging developments outside the business sector are likely to tie companies’ bottom lines more tightly to their eco-efficiency performance.

The notion of a “tax shift” has been around for some time. It denotes a shift from taxing social benefits such as employment to taxing damage to society such as pollution and the waste of resources. Proponents have pushed the shift as much as a tool to increase employment as an anti-pollution device. Changes in accounting practices are part of this process. Critics have been concerned that governments could be tempted to use such a shift as a guise for collecting more revenue. Despite these concerns some countries, such as Norway and Sweden, have begun to shift their tax systems with the introduction, for example, of a limited carbon tax. There is still debate on whether this is the best way to internalize externalities.

The report of the President’s Council on Sustainable Development (PCSD) in the US called for this type of tax shift. This is especially significant in that the PCSD brings together government cabinet members, business leaders, and NGO leaders. All agreed on the logic of such a shift, as well as on changes in national standard accounts and wider use of economic instruments. Just a few years ago such recommendations would have been viewed as radical; now they are the logical conclusions of establishment figures from various sectors of society.

*The list of trends reveals a greater focus on the environmental side of sustainability than on the social side. This reflects the focus of society as well as the fact that business’ environmental responsibilities are clearer than its social ones. But the pace of change is strongly influenced by the extent of political and societal will to encourage change.*

As for national standard accounts, it is commonly understood that they are flawed in that a rising gross national product or gross domestic product (an apparent sign of a thriving nation) measures rates of expenditure, and says nothing about the state of the resource base, which plays an important part in long-term national prosperity. This is similar to judging an individual's economic worth on what he or she spends, rather than on the value of his or her real property, equity holdings, salary, and savings. There is much debate on how to change these indicators, but a good deal of agreement that change must come and in ways that reflect the health of the resource base.

What has been less discussed is the fact that any such change in national accounting will rely heavily on data supplied by business. What natural resources does a company use? In what quantities? To what extent are these resources renewable? It is trite but true that, in business, "what gets measured gets done." So this change in national accounts will cause a profound change in the ways in which companies manage their resource use.

Greater effective use of appropriate economic instruments would encourage companies into continuous improvements in resource use and pollution release, as opposed to the get-to-a-given-level-and-stop effect of most regulations. However, there will always be a need for clear, effective, enforced regulations, especially in cases of threats to human health.

In a world in which all the developments listed above had taken effect, it would be impossible to imagine an enterprise able to be environmentally sloppy and yet still competitive in the marketplace. Today's world is some way from that state, because environmental resources and pollution sinks are often under-priced, and governments often subsidize the misuse of resources.

But the trends are real. Astute chief executives are positioning their companies to take advantage of these trends—that is, they are making them more eco-efficient and more in line with the demands of sustainable development. They are banding together to push these trends along so their companies will benefit sooner rather than later.

This discussion applies mainly to big companies. Small and medium-sized enterprises tend to lack the capital, executive time, and room to maneuver to improve rapidly in eco-efficiency. They will need the impetus of improved government frameworks and of the larger companies, which many of them supply.

*The report of the President's Council on Sustainable Development in the US called for a type of "tax shift." Just a few years ago such recommendations would have been viewed as radical; now they are the logical conclusions of establishment figures from various sectors of society.*

## IMPROVING THE FRAMEWORKS

How can business travel more quickly along the positive route to sustainable development? One important approach is to keep improving lines of communication among business, government, and NGOs. There is an inherent logic to sustainable development on which all can agree, whether the starting point is a government, or a business, or an NGO perspective. Documents coming out of mixed councils such as the President's Council on Sustainable Development of the US are proving this to be true.

Some countries still need to make deep reforms in government institutions to improve democracy, freedom, and human rights. The report of the World Commission on Environment and Development (the Brundtland report) concluded, in fact, that the prerequisite for sustainable development is "effective citizen participation in decision making." This goes far beyond holding national elections every few years; it has to do with guaranteeing the rights of citizens and citizen groups to information, rights to consultation in matters affecting them, and rights to legal redress. In many countries, business will have to become more adept at respecting and working within those rights.

From a business and economic viewpoint, many nations require basic institutional changes beyond human rights improvements. These might be divided into first-and second-generation reforms.

The first set involves methods of correcting resource misallocation by improving price signals so that resources are shifted from less efficient to more efficient uses. These include: steps to decrease inflation, trade protection, subsidies, and the number and power of state-owned-enterprises. Also needed are steps to make financial markets more efficient, resilient, and independent of government interference.

Second-generation reforms remove the barriers that keep resources from moving toward more efficient use. These include more secure property rights; better dispute resolution mechanisms; improvements in the appropriateness, clarity, and enforcement of regulation; more stable political frameworks; and improvements in legal systems and access to these systems. Judicious privatization can make more efficient use of resources and bring business skills and investments into areas where they are needed. It also sends the necessary signal that a government will henceforth be less involved in the economy and less likely to reverse key reforms.

The creation of secure property rights can play a role in sustainable development too, mainly through the encouragement of small businesses. It can motivate investment, including that in foreign technology. It provides collateral. It can lower the transaction costs.

*There is an inherent logic to sustainable development on which all can agree. One prerequisite is effective citizen participation in decision making which goes far beyond holding national elections.*



Being able to buy and sell property easily also helps people move to where there are jobs and opportunities.

There is growing evidence that first-generation reforms, as important as they are, cannot spur development without a large representation of second-generation reforms. However, there is even more evidence that neither first- nor second-generation reforms will bear fruit among people who cannot get either health care or education, particularly primary education and skills training. Business can play a role in these areas, but both will remain primarily the responsibilities of governments, and of the citizens who vote for them.

### THE BUSINESS ENVIRONMENT

With conditions so different around the world and with nations at different development stages, it is hard to make a meaningful list of policies needed to help business better support sustainable development. It is clear that such policies must be based on an integrated view of the economy, society, and the environment. Every government's responsibility is to devise the policy frameworks—in conjunction with business and citizen groups—that will allow consistent and realistic goals to be developed and met. These goals must be based on good science and assessment of risk, and should balance ecological, economic, and social objectives.

The conditions needed for business to make a greater contribution to sustainable development include the following:

#### **Freer and more open markets**

Where governments excessively interfere in domestic markets, economic development suffers. Trade is the lifeblood of all economies. Open, prospering markets are a powerful force for creating equal opportunities for nations and people. Open, competitive markets create the most opportunities for the most people. Nations with these markets will be the most successful in fighting poverty, and this framework provides the greatest opportunities for people to free themselves from the remaining poverty.

#### **Stable and predictable trade rules**

Business needs a stable and predictable legal and economic climate in which to operate. This is created through rules that help guarantee the conditions for freer and fairer competition in world markets. For example, the World Trade Organization attempts to do this through limiting trade restrictions. Environmental standards should be designed to avoid creating barriers to trade. Eco-labeling schemes must especially avoid being distorted into trade barriers.

**International standards**

Business should be encouraged to voluntarily achieve agreed-upon standards of quality and environmental performance. Standards such as those from the International Organization for Standardization are providing an independent verification of quality in various areas without creating barriers to trade.

**Realistic target-setting**

Governments should work with business and other groups to set targets that recognize the realities under which business operates. These targets should encourage efficiency and cost-effectiveness, should allow business flexibility of responses to meet goals, should allow for gradual introduction so that business has adequate time to adjust, should be fair and equitable across business sectors, and should provide transparency of compliance so as to eliminate free riders.

**International solutions for international problems**

Global issues, such as loss of biodiversity and climate change, cannot be dealt with strictly on a national or regional basis. While appropriate local actions are required in dealing with such threats, international frameworks are needed to establish goals and to put in place the most effective solutions. These frameworks may range from international treaties and conventions on emissions to international agreements on activities such as Joint Implementation.

**Fast dissemination of technology**

The development and use of new technologies provides society with a tool to overcome many social and environmental problems. Policies are needed to encourage such technologies by breaking down barriers to their use. For example, an auto fleet comprised of low-emission models could help to reduce overall emissions and should be encouraged. This can be achieved in a number of different ways, such as allowances on scrapping old vehicles and favorable tax treatment on investing in new technology. International dissemination of technology requires suitable investment frameworks and the building of skills and know-how to use it effectively.

**Educate the market**

Sustainable development demands sustainable consumption in line with sustainable production. There is considerable debate on how this can be achieved; but harnessing market forces is always a preferable route, and an obvious first step is to make appropriate information

available to consumers. For example, buyers could be encouraged to opt for the most energy-efficient models of appliances if they were given information to allow them to compare energy costs over time. Care must be taken over labeling schemes to ensure that these cannot be distorted into technical barriers to trade. Tax policies can also encourage builders, buyers, and renters toward more energy-efficient buildings. The task of providing the necessary information for consumers to make sensible choices would be made easier if costs (such as the cost to the environment from waste emissions) were reflected as much as possible in prices and hidden subsidies were removed. Such internationalization of so-called externalities needs to be gradual to prevent sudden market distortions.

#### **Economic instruments that motivate**

Governments should use market mechanisms and introduce new economic instruments (or amend existing ones) to encourage actions that move toward the goals of sustainable development. For example, favorable treatment of investments in clean technologies—within a revenue-neutral tax shift—could speed their introduction. Energy efficiency would be encouraged and greenhouse gas emissions per unit of output would be reduced by a system of tradable permits for emissions: this is when policy makers fix the total amount of emissions and the government then issues a set number of permits to cover the emissions. Under such a system emitters are allowed to buy and sell the permits.

#### **Voluntary agreements**

Command-and-control policies, while still effective as part of the general mix of policies, have proven inflexible and overly costly for both government and business. Voluntary agreements can overcome these problems. Such agreements come in many forms ranging from legally binding agreements to voluntary initiatives. They provide flexibility, which allows business to achieve the desired goals in the most economically effective manner possible. This benefits the entire economy of the nation precisely in line with Agenda 21. For example, in negotiated agreements between government and industry, certain industrial sectors agree to take specific actions without the need for legislation. The Dutch have pioneered these agreements and other countries, such as Portugal, Australia and the United States are experimenting with them. Initiatives taken voluntarily by industry, such as those on energy efficiency by the European chemicals industry and those by Japanese industry, have no legal status but nonetheless can be effective at achieving specific goals.

## THE RESPONSIBLE COMPANY

As noted, there is much debate about the appropriate responsibilities of government, business, and citizen groups. It is not clear how this will be resolved. A growing number of business leaders realize that to achieve market success they must honor a changing array of environmental and social responsibilities.

Members of the WBCSD are building these responsibilities into their companies and are being helped in their task by the Council which addresses sustainable development issues of crucial importance to business.

How can such a “responsible company” be described today? It is built on the concept of eco-efficiency with its emphasis on doing more with less. It is profitable and continues to add environmental and financial value for its shareholders and to create wealth in society. It devises management systems that help it measure, monitor, and continually improve its performance in contributing to the goal of sustainable development. It conforms to best practices in its sector and reports regularly on its social and environmental performance. It has an open and transparent relationship with everyone outside as well as inside the company who has a legitimate interest in its activities—its stakeholders. It ensures that its decisions are fair and just to those affected and it encourages full participation with wide consultation with its stakeholders before it acts.

Such a company bases its decisions on good science and risk analysis and will respond to scientific uncertainty by adopting a precautionary approach in those areas of its business where there is reasonable concern about the potential to cause harm to people and to the environment. To prosper in fast-changing markets, it reacts to demands from customers for products and services that are environmentally sound in themselves and that also help users improve their own environmental performances. To achieve this the company uses a number of tools, such as life-cycle analysis to design products that contribute to sustainable development.

People should not serve the market; the market should serve people. Where governments set the appropriate framework conditions, it usually does. A key element in this process will be to encourage financial markets to reward eco-efficient companies and set free-trade policies which take into account environmental and social concerns. The market can help provide more sustainable forms of progress if it mirrors sustainable development concerns just as effectively as it reflects economic realities. Such a market can be created with the changes outlined in this article.

*People should not serve the market; the market should serve people. When governments set the appropriate framework conditions, the market can help provide more sustainable forms of progress— if it mirrors sustainable development concerns as effectively as it reflects economic realities.*

This article is an adaptation of extracts from the World Business Council for Sustainable Development report *Signals of Change: Business Progress Towards Sustainable Development*. Copies of the full report (price is Ten Sterling Pounds plus postage) can be obtained from:

F&Y Direct  
P. O. Box 934  
Poole  
Dorset  
BH17 7BR  
United Kingdom  
Tel: 44 1202 679 885  
Fax: 44 1202 661 999

STEPHAN SCHMIDHEINY, RODNEY CHASE, AND LIVIO DE SIMONE

Stephan Schmidheiny, Rodney Chase and Livio De Simone are members of the Executive Committee of the World Business Council for Sustainable Development.

## Engaging the Private Sector Through Public-Private Partnerships

The Honourable J. Hugh Faulkner, P.C.  
Executive Chairman, Sustainable Project Management

### ABSTRACT

This article focuses on case studies of public-private partnership projects. It outlines features of those projects, such as selection criteria for project sites, selection criteria for private sector partners, and larger networks of support, which seem to contribute to the success of such projects. Several specific sites are described in brief as are some auxiliary programs which serve to encourage and support these site-specific efforts. A list of some lessons learned from these seminal public-private partnership projects provides some guidance for the future.

The United Nations Conference on Environment and Development (UNCED) in 1992 signaled the start of a new era. The conference adopted Agenda 21, a far-ranging program of reform, and 150 government leaders from around the world approved other important outcomes. The degree of change agreed to for the global economic, political, and social system was so fundamental that the process risked foundering in inertia.

One clear message from Rio was that the task ahead was too much, and too important, for governments alone. New partnerships had to be forged—and the business community, among others, was enjoined to get involved. Conference participants were very clear that the private sector had to engage actively in implementing the sustainable development agenda.

Agenda 21 talked boldly about new roles through new partnerships: business and industry “should be full participants” in the post-Rio process, the public and private sectors “should strengthen partnerships to implement the principles and criteria for sustainable development,” and the public sector “should establish procedures” to allow an “expanded role” for the private sector. In short, UNCED urged the public sector—governments, UN agencies, international financial institutions—to put aside its traditional suspicion, even distrust of business, and work with it as a full-fledged partner in implementing Agenda 21.

This represented a sea change in attitude: recognition, at last, that the private sector has a powerful contribution to offer at three levels:

- by improving corporate environmental performance throughout business and industry;

- by creating, through a policy dialog with government, the right framework conditions; and
- by becoming actively involved in specific projects that support sustainable development goals.

The first two had, and still have, their difficulties. But the third was always likely to be a particular challenge. The traditional approach to bringing the private sector into public projects has not been successful in financial, social, or human terms.

This is particularly true in urban areas. There, despite huge investments in new infrastructure, cities and towns in developing countries and emerging economies are overwhelmed by seemingly intractable problems of waste, poor sanitation and sewerage, air pollution, and inadequate water supplies. This experience demonstrated that ways must be found for enlisting the private sector in implementing *successful* sustainable development projects.

UNCED's urgent insistence that the private sector should have an expanded role in moving Agenda 21 forward, in collaboration with the public sector, provided the key to unlocking the door to a completely different approach: the concept of public-private partnerships (PPP). The immediate post-Rio challenge was moving PPP from concept to action.

After Rio, the Business Council for Sustainable Development (BCSD)—which had produced a major report, *Changing Course*, for UNCED—decided its work had to continue. As its Executive Director, I was charged with developing a new BCSD work program for approval at the Council meeting in December 1992.

The UNDP and other international agencies were invited to explore ways in which to work together. It became clear quickly that there were real institutional barriers to forging partnerships. Despite the goodwill and enthusiasm of Rio—even the determination to change—each “house” had its own rules, administrative procedures, objectives, and priorities, and each expected the other potential partner to do business on their terms. Even today, “institutional barriers” and an apparent lack of “political will” to reform them remain the most stubborn and powerful obstacles to real change.

Fortunately, UNDP was prepared to experiment and initiated efforts to create the framework to allow a partnership with BCSD and the private sector to happen. BCSD, as a Secretariat, had far fewer constraints because we were new and small, had no history of administrative buildup, and had the flexibility to be as “entrepreneurial” as needed.

*UNCED's insistence that the private sector should have an expanded role in moving Agenda 21 forward provided the key to the new approach of public-private partnerships. “Institutional barriers” and an apparent lack of “political will” to reform them remain the most powerful obstacles to real change.*

The UNDP-BCSD discussions focused on where we could cooperate most effectively. We decided to start on urban infrastructure problems—water, waste, and energy efficiency—in the developing world, which were more likely to worsen before they improved. There was, we agreed, an urgent need to mobilize new sources of finance, technology, and management. We decided to develop the Public-Private Partnership model.

Sustainable Project Management (SPM) was set up in 1994 specifically to initiate this approach. During that year, SPM became an important activity within BCSD, working with UNDP on developing pilot demonstration PPP projects through the ground-breaking Public-Private Partnerships for the Urban Environment (PPPUE) program. The initial response to these projects convinced BCSD and UNDP to move more aggressively in developing the model. In January 1995, SPM became an independent, not-for-profit enterprise.

Today, SPM is involved in more than 20 projects worldwide—some of them with UNDP, some others with ODAs directly, and the rest involving SPM and private partners—that are focused on eco-efficiency, technology cooperation, and capacity building. Crucially, the private sector is participating in them through viable new public-private enterprises. And SPM's experience to date shows that public-private partnerships work, bringing a badly needed infusion of technology, finance, and management to tackle desperately serious urban problems.

*UNDP initiated efforts to create the framework for a partnership with BCSD and the private sector. We decided to start on urban infrastructure problems in the developing world using the public-private partnership model. Experience to date shows that the model works.*

## WHY PUBLIC-PRIVATE PARTNERSHIPS?

Water, waste, and energy services in developing countries have traditionally been the exclusive responsibility of public authorities. But these agencies cannot, on their own, meet the continually expanding demand for services.

They lack the funds to improve and develop services. They have difficulties identifying and affording new, eco-efficient technologies. They lack the skills to manage the services efficiently. They cannot cope any longer.

Also, while traditional development assistance plays a vital role in enabling governments to meet urban and other environmental challenges, the international flow of official development assistance (ODA) is a fraction of what is needed. There is an urgent need to find new sources of financing, as well as technology and management.

The private sector has financial, technological, and management resources as well as a proven track record of providing lower production costs, delivering services more efficiently, maintaining



capital equipment at a higher standard, making decisions faster than public bureaucracies, and offering consumers greater choice.

So, why not privatize the services? Certainly, this is an option, but it has its limitations. Governments need to remain involved in providing these essential services. Their involvement guarantees a degree of public accountability, preserves the public service ethos, ensures the protection of all sections of society, and underwrites the delivery of social and environmental, as well as economic benefits; that is, it meets sustainable development as well as purely financial goals.

The public-private partnership model—where the public and private sectors assume co-ownership and co-responsibility for providing high-quality city services—is an alternative to both a public-sector monopoly (traditionally delivering substandard services) and full privatization.

### NEW PUBLIC-PRIVATE ENTERPRISES

Through the PPP initiatives, SPM in partnership with UNDP is translating the concept of public-private partnerships into action by creating new enterprises, owned jointly by public authorities and private companies, to deliver reliable, affordable, profitable, eco-efficient urban infrastructure services.

These enterprises pool the best features of the two sectors: the dynamism, access to finance, knowledge of technologies, managerial efficiency, and entrepreneurship of the private sector with the social responsibility, environmental awareness, local knowledge, and job creation concerns of the public.

Community participation is a central element, from a project's conception to its management. Capacity building—training local people to adapt, develop, and operate clean technologies—is another key component.

One fundamental point is that these new public-private enterprises are bringing business solutions—not aid or debt—to urgent urban problems. SPM and UNDP agreed at the outset that if the private sector was to be involved, the structure had to have a proper business dimension. This meant finding ways of turning those problems into viable businesses. So the new mixed-capital enterprises are intended to be profitable companies, charging users an economic, not a subsidized, price for their services. Their survival will depend on profitability and quality of performance—powerful incentives for them to supply services of the right standard and at the right price.

### THE SPM-UNDP APPROACH

The new for-profit public-private enterprises represent an innovation in tackling urban problems. Similarly, the process leading to their formation also represents a dramatic break with past approaches.

Every SPM-UNDP project has to meet clear and specific criteria:

- be demand-driven and address a priority problem;
- fully involve the public and private sectors from the outset;
- demonstrate a strong potential for attracting private-sector participation, including the possibility of reasonable profit ability;
- use eco-efficient technologies;
- provide an opportunity for improving local social conditions through job creation, training, and overall improvement of city services and urban living conditions;
- respect local cultural values and established traditions; and
- involve local stakeholders, non-governmental organizations (NGOs), and community groups in its development.

Private-sector partners must also meet sharply defined criteria before they qualify to be involved in projects. They must:

- be willing to contribute to the cost of the project's feasibility studies from the outset;
- be prepared to invest in the new company when it is formed;
- preferably have experience operating the eco-efficient technologies to be used by the new company;
- in the case of international firms, have experience operating in a developing country;
- have the support of its own government's development agency; and

- strongly support and advocate eco-efficiency and local participation.

SPM-UNDP projects are small to medium-scale—typically between \$5 million and \$30 million—but vital to making a real difference in ordinary people’s lives by tackling some of the most urgent urban environmental problems in developing countries. Most of the PPP projects have been found through the BCSD regional network, private-sector initiatives, local as well as international, local UNDP country offices, and ODA agencies.

They are focused on the areas of water and sanitation, waste management, energy services, and the eco-efficient use of natural resources, and they address a range of issues—water pollution, inadequate water supply, insufficient sanitation infrastructure, excessive waste of natural resources in industrial production processes, inadequate or nonexistent waste management procedures, environmentally unsound technologies, lack of environmental education, lack of environmental considerations in development initiatives, and ineffective and wasteful energy sources and technologies. The intention is that they are replicable, that is, they address problems of common concern to other cities in the region, and even beyond, and can be easily transplanted there.

The new public-private companies running the projects include a mix of partners: national, regional, and municipal authorities; national development banks and utilities from the public sector; and from the private sector, local and international companies, banks, entrepreneurs, equipment manufacturers, technology suppliers, management groups, chambers of commerce, trade unions, NGOs, and consumer organizations.

But these direct investors represent only the tip of a much bigger iceberg. One striking feature of the UNDP-SPM program has been its rapid expansion into an international network—including four global networks that SPM and UNDP have cultivated in order to forge a unique collaboration between scores of public and private institutions, committed to tackling urban challenges in a comprehensive way. This network is composed of:

- scientific, academic, and technology institutes, chaired by the Massachusetts Institute of Technology;
- NGO communities in both developing and industrial countries that are willing to work with the public-private partnership approach;

*SPM-UNDP projects are small to medium in scale, but making a real difference in ordinary people’s lives by tackling urgent problems—water and sanitation, energy services, and the eco-efficient use of natural resources.*

- governments, national development agencies, UN agencies, and multilateral financial institutions; and
- BCSD chapters and other private-sector organizations or corporations committed to sustainable development.

## CASE STUDIES

The current PPPUE program includes projects in Latin America, Africa, Asia, and Eastern Europe. Following is a sample of these. In each, the most important feature is that they are making an important impact and are successful because of the partnership between the public and the private sectors:

### MANIZALES, COLOMBIA

The city of Manizales is at the center of one of the most important coffee-producing regions in Colombia. Consisting mostly of small coffee producers using outdated coffee washing technologies, the region represents a challenge to the authorities. The main challenge was coping with the polluting effects of this industry so vital to the Colombia economy.

Armed with a better locally-developed technology, local managerial talents, and local finance, the project partners proceeded to design one of the most interesting and well integrated projects of the PPP.

The Manizales project originated in a wide-ranging attempt to address critical issues related to water supply and quality, including the problems caused by coffee producers using a traditional, highly polluting coffee washing process, in which washing 1 kilo of coffee beans generates 40 liters of highly toxic water that is generally poured back into the rivers and streams on the plantations. Soil erosion through deforestation and domestic waste pollution of rivers were other issues.

With the assistance of SPM and UNDP, a new company was registered and capitalized to examine the business potential of a new, water-economical coffee-washing process, to manage a reforestation program, and to provide an urban domestic waste collection service to outlying municipalities. The shareholders include the government of Caldas state, the departmental water supply and distribution companies, the electricity utility, the local cooperative of coffee growers, and a provincial financial institution.

The company, called Agua Pura SA, was set up in late 1994. It has developed a business plan for a full domestic solid waste collec-

tion, disposal, and recycling operation, covering 21 municipalities (50,000 households) and 5,000 commercial businesses, with an initial investment of \$3.5 million. Agua Pura SA expects sales in year one of \$1.4 million.

The Manizales project has considerable potential for replicability. Five other cities in the state of Caldas are interested in undertaking similar initiatives. So, too, are five other Colombian states. In addition, other coffee-producing countries, including Honduras and Costa Rica, have expressed interest in replicating the development of the coffee-washing project.

One of the most attractive features of the Manizales project is that it has consisted of an exclusively country-driven initiative in which UNDP and SPM were only catalysts and brokers. The capital, the management talents, and the technology were purely national.

#### HARARE, ZIMBABWE

The project in Harare envisages the creation of an energy-environment management enterprise to bring eco-efficient technologies to the Willowvale Industrial Park, an industrial area just six miles from the center of Zimbabwe's capital, in order to improve energy and water management practices there.

There are about five industrial parks in the area of Harare and additional parks are in the process of development. This represents a great challenge to the authorities since, if unchecked, the pollution at these industrial parks could render them major environmental hot spots. The fact that there are other industrial parks in the process of development presents both challenges and opportunities to the government. The opportunities are that the present project, if successful, could provide a basis for replicability in other industrial parks.

The Willowvale park is surrounded by high-density, low income suburbs with growing populations. These growing populations, the proximity to the center of the city of Harare, and the need to address the problem of deteriorating services for this important constituency, drove the authorities in Zimbabwe to explore the alternative of public-private partnerships being promoted by SPM and UNDP as a way to address the growing environmental problems of the city.

A pre-feasibility study involved 25-30 companies in the park, together with the City of Harare (water supply), the power utility (ZESA), and the local Industrial Development Corporation, alongside five companies physically in the Industrial Park, as well as the Confederation of Zimbabwe Industry. A shadow company has been formed, and a leading German investment and development com-

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pany (DEG) is funding a full technical and economic feasibility study paving the way, in due course, for a business plan and bankable document, and the creation of a company in which the major shareholders are the government entities participating in the project and a selected number of private companies interested in joining.

The Zimbabwe Government, with three ministries signing the original statement of intent, is firmly behind this project, which could be replicated at other existing industrial areas and be used for major new industrial park developments.

#### OSTRAVA, CZECH REPUBLIC

Ostrava is an example of an existing private company—needing to expand but lacking the resources to do so, looking for financial partners, and being prepared to consider a PPP—combined with keen interest by the public sector in investing in the new partnership. The existing company produces plastic protection for underground electric cables, using recycled plastic from municipal solid waste. There is a fast-growing demand for its products. Three municipalities and 13 towns in the district are interested in participating in a new mixed-capital enterprise because they see the project as a test for possibly developing waste management solutions on a regional basis. Certainly, the opportunities exist along with the need to tackle the problem of substantial urban waste in the area—the legacy of intense industrial activity there. Other private companies are reportedly willing to become involved too.

SPM and UNDP have proposed a regional development company, which—if the plastic recycling project works—would initiate other activities, either to rationalize existing waste management practices, and/or to introduce new ones, such as composting, fly ash transformation, and hazardous waste incineration.

#### SPISSKA NOVA VES, SLOVAK REPUBLIC

In the municipality and region of Spisska Nova Ves, a new company, the Spisska Regional Environmental and Energy Company (SREEC), will become the vehicle for PPP. It is a joint venture between the municipality (40%) and a Slovak private company, Pluralité-Mega (60%). Supported by SPM and the Swiss and Canadian governments, SREEC will create subsidiaries, or operating companies, with local and international partners and investors to implement projects in district heating and energy efficiency, forest management linked with housing development, a capacity building center for community development, and solid waste management.

SREEC is a regional business development tool committed to eco-efficiency and PPPs. By combining local investors with international technology companies, it becomes a vehicle for technology transfer. It is a flexible investment instrument capable of responding to local concerns and opportunities.

It was district heating problems that brought SPM into Spisska. Once there, and after discussions with the Mayor and others, new projects began to emerge. SREEC became the instrument for developing these opportunities into new businesses. In all our projects, we create these PPP development companies early in the process.

The new district heating company is now operational, with two international investors. The old district heating company has been merged into the new one. Now efforts are under way to replicate the model in the region and in neighboring companies. The housing company project is now under way too.

### METAP III: PUBLIC-PRIVATE PARTNERSHIPS REGIONAL INITIATIVE

The Public Private Partnerships Programme, and SPM, have been retained as the main advisory agent in the implementation of the World Bank/UNDP-funded PPP initiative of Phase Three of the Mediterranean Environmental Technical Assistance Programme (METAP).

So far, SPM and UNDP have conducted project-finding missions to Jordan, Turkey, Lebanon, Morocco, Egypt, and Tunisia and have identified urban waste collection and recycling, as well as industrial waste collection and disposal, as just two promising areas.

These missions have shown that while the economic, political, legislative, and operating environments of the different countries inevitably pose problems and challenges specific to each country, the PPP potential throughout the METAP region is significant.

By establishing sustainable business partnerships, PPP projects will provide a real opportunity to build on the thorough and far-reaching environmental technical assistance already provided in Phases One and Two of the METAP program, and the extremely promising replication and capacity building potential would tie in with other METAP regional activities.

### LESSONS LEARNED

SPM and UNDP now have enough experience under their belts to draw some important lessons from the PPP approach.

*SPM and UNDP have conducted project-finding missions to Jordan, Turkey, Lebanon, Morocco, Egypt, and Tunisia and have identified urban waste collection and recycling, as well as industrial waste collection and disposal, as promising areas for development.*

### CHOOSE THE RIGHT PROJECTS

There is no shortage of potential projects for the PPP approach. Early meetings invariably produce a long shopping list of possibilities. The key is to choose the right project, one that meets the criteria set out earlier, and has real commitment from the public and private sectors locally to make it succeed. This is especially important when it is the first project in the country and therefore the first exposure to the new PPP model.

### EVERY PROJECT NEEDS A CHAMPION

Ideally in fact, every project needs two champions—one from each sector. High-level local political commitment is particularly important. For example, the progress achieved with the Manizales project owes much to the fact that it had a high-profile champion, the former Governor of the Department of Caldas, at an early stage. But without private sector involvement, the new company could not be a success.

### LOCAL SUPPORT IS CRITICAL

Identifying local support has been extremely important to the success of SPM projects to date. The local UNDP office—the Resident Representative—has proved an invaluable ally in leading on the ground by advising on local priorities, contributing contacts, and offering a “visiting card” link to government and NGOs. The collaboration with NGOs can be particularly fruitful. This is certainly the situation with the Southern Centre for Energy and the Environment in Harare and with Fundacolon and ANDI in Manizales.

### EACH PROJECT NEEDS HAND-HOLDING ALL THE TIME

Normally, this is an SPM role. SPM’s task is also to find a dynamic, committed local project development manager to ensure on-site follow-up on each project and to keep the momentum going. Otherwise, the project can slip for many reasons associated with the novelty of the process. We really need a local partner, an extended arm of SPM.

### PACKAGE THE PROJECTS PROPERLY

Small or medium-sized projects need to be packaged to attract investor interest. Larger projects have their own dynamic. Smaller ones have disproportionately higher transaction costs and political risks. If you add in the innovation of securing eco-efficiency goals and waste minimization, the crucial importance of packaging, brokering, negotiating, persuading, and convincing becomes clear.

Current public institutional tendering procedures for smaller



projects make little economic sense in terms of both cost and delay. Nor has the process satisfactorily shown that all interests are necessarily fully protected. We have to develop new ways of securing the alleged benefits of tendering without the costs in time and money. PM/UNDP/ODAs expect to produce some recommendations on this shortly.

#### THE PROCESS TAKES TIME

There are no short cuts to a PPP project. The host government has to be persuaded of the concept. Projects have to be identified. SPM's catalyst role has to be understood. The process needs to be explained carefully at the outset. Private investors have to be found. Public and private partners have to be brought together. It is a complicated and time-consuming jigsaw to piece together and it begins with careful groundwork and preparation. But proper preparation is the essential ingredient to the political and economic viability of the project.

#### RECONCILE DIFFERENT CULTURES

Administration cultures (the public sector) and entrepreneurial cultures (the private sector) are fundamentally different. The former is procedure/process driven; the latter, results driven. Issues like the cost of time delays or indecision can be important barriers to partnership and have handicapped public projects using the old, traditional approach. Yet there is no inherent reason why the public sector should be less efficient than the private sector. The PPP model is designed to cut through this problem by stimulating the public sector into understanding that it shares responsibility, and the cost of issues like delay and indecisiveness.

#### BUILDING MUTUAL TRUST IS VITAL

The public and private sectors have little experience of working together except on the basis of supplier and customer. Normally, they are not working partners who share ownership of, as well as responsibility for, a successful project.

The PPP model, in which SPM acts as catalyst, marriage broker, and midwife for the project, provides the vehicle for developing a trust and confidence level that helps to iron out problems and avoid the traditional adversarial posturing between the two sectors. Getting both sides to the table to consider problems together and identify joint solutions is a critical first step. This gives them a shared interest in the success of the new company. Through working together they come to understand each other's constraints and expectations.

A key step in the process is to get both parties to sign a Memorandum of Interest with a budget and an Executive Committee to manage the feasibility stage. Getting the partners into a legal structure early on in the process, and requiring them to agree on objectives and invest a modest amount of capital up front, is an important test of intent. This process provides three key ingredients: joint ownership, commitment, and management structures. Partnership leads naturally into the new operating company.

#### BUILD A PLATFORM FOR POLICY CHANGE

Shared project experience can become a platform for policy change at the government level. Subsidized services are a case in point. When governments are investors in an operating company, which must pay wages and debt obligations, as well as return a profit, they look at user fees with a fresh perspective.

#### OTHER PUBLIC-PRIVATE PARTNERSHIPS

##### CAPACITY BUILDING CENTERS

SPM's Capacity Building Centers (CBC) initiative brings the public-private partnership model to bear on finding a new approach to capacity building that goes beyond training by integrating technology adaptation and other eco-efficiency services.

Each CBC involves partners from both the public and private sector, supported by the same global network of private companies, scientific and academic communities, international financial institutions (including development banks and agencies), and NGOs that is part of the PPPUE program.

The sector-specific CBCs provide practical capacity building programs for large, medium, and small companies and/or industries, focused on eco-efficient principles, practices, and technologies—including technology transfer—and also support the creation and management of small, self-sustaining community enterprises.

This approach aims to remove the sources of frustration inherent in current training practices. To train an individual without engaging the employer's commitment to that person's future activity is frustrating for the employee. Similarly, to restrict capacity building to the training of individual employees is likely to frustrate employers. To be effective, capacity building must focus as much on the company (or institution) as the individual. More important, the company must feel and have a sense of ownership of the program. The days of free training programs are, or should be, numbered. If it is worth doing, it is worth paying for.

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The SPM initiative is being supported by two Canadian entities, Interel and Pluralité International, by the World Business Council for Sustainable Development, and by the International Secretariat for Water. Examples of CBCs are found in Pereira, Colombia, and in Hanoi, Vietnam.

#### FINANCE FOR MICRO AND SMALL ENTERPRISES

Another SPM initiative within the framework of public-private partnerships is the establishment of two new entities in India to help micro and small enterprises move to eco-efficiency: the Indian Micro Enterprises Development Foundation (IMEDF) and the Indian Micro Enterprises Development Finance Corporation (IMEDFIN), a non-banking finance company. The aim is to leverage eco-efficiency change by micro enterprises, supported and provided by IMEDF, through credit provided by IMEDFIN.

This approach has a number of innovative features:

- Public-private partnerships are central from the outset.
- Credit is linked with eco-efficient technology.
- The focus is on using credit to introduce eco-efficient technologies to the micro enterprise sector to generate surpluses to make the enterprises sustainable.
- Credit will be an important vehicle for achieving vertical and horizontal linkages among the micro, small, medium, and large sectors—for example, through financing the development of ancillaries in the small and micro sectors.
- Credit will be integrated with technical and management support services to ensure business success.
- Commercial and social objectives will be integrated.

IMEDF and IMEDFIN will meet a real need in a sector where appropriate market instruments have not been designed. In mobilizing the resources to get them operational, however, we have encountered the view among the public and private sectors, social activists, and NGOs that the small and micro sectors are still a government problem, risk is high while return is low, and there are no opportunities for a competitive return on investment. We need to change this thinking.

## NEXT STEPS

The need for urban infrastructure projects is enormous, and the demand for PPP projects is growing among both municipal authorities and prospective private investors. As a result, the Public-Private Partnerships for the Urban Environment program is to be expanded into a second worldwide phase.

Under the leadership of UNDP, a Project Development Facility (PDF) is being created to provide the mechanism for identifying and developing more projects. The aim is to raise \$10 million in contributions from the donor community to finance the initial phase of 30-50 projects over a five-year period. Some governments have already committed to support the PDF.

SPM and UNDP anticipate that within this period the PDF will become self-financing and eventually become an independent corporation operating under the management and supervision of its participating shareholders. The PDF will experiment with a number of activities designed to raise income, such as endowment funds, consultancy services, dividends to the Facility, royalties, and revolving funds.

The new program will retain the key essentials of the pilot phase, including the PPPUE network of partners—governments, NGOs, local communities, academic and training institutions, technological institutes, and of course, the private sector—coordinated by a small, core management team provided by SPM and UNDP.

*In mobilizing the resources to get appropriate market instruments operational, however, we have encountered the view among the public and private sectors, social activists, and NGOs that the small and micro sectors are still a government problem, risk is high while return is low, and there are no opportunities for a competitive return on investment. We need to change this thinking.*

## CONCLUSIONS

The public-private partnership model initiated by SPM and UNDP through the PPPUE program, is fully in tune with Agenda 21's call for more private-sector participation in reform in cooperation with the public sector. UNDP says that it is "one of the most promising forms of cooperation now emerging for sustainable development."

The PPPUE program, in particular, has led to four specific innovations:

### IT USES ODA TO LEVERAGE PRIVATE SECTOR INVESTMENT

Through a relatively small amount of initial "risk" capital, governments involved in the program can create an attractive opportunity to involve private business at a much more substantial level. A front-end expenditure of development assistance funds to initiate a potential project can catalyse public- and private-sector investments many times greater.

#### IT ESTABLISHES LINKAGES BETWEEN INVESTMENT AND CAPACITY BUILDING

One drawback of private-sector investments is they lack an enabling environment—human skills, strong institutions, legal framework. So they often fail. Conventional development projects also fail to produce effective enterprises or institutions able to generate sufficient revenues to sustain themselves over time. Public-private partnership ventures link the best investment practices of the private sector with the experience of development practitioners in creating an effective enabling environment with all the supporting mechanisms in place to make the projects sustainable.

#### IT IS A NEW TYPE OF PROJECT MANAGEMENT

The program is a pioneer in sustainable project management—one that emphasizes eco-efficiency, stakeholder participation, replicability, and a more comprehensive and sustaining approach to development. The focus and priorities are different and so are the results.

#### IT ACCELERATES TECHNOLOGY TRANSFER

Municipal authorities have no experience of what eco-efficient technologies are available, let alone which to choose. SPM, supported by its international network, overcomes this problem by facilitating the identification of the technology choice for each particular PPP project and negotiating the terms of its transfer between the public and private sectors.

In essence, the public-private partnership model offers a real opportunity to cut through much of the inefficiency and waste of the traditional approach to urban problems, and provides workable solutions that meet urgent major needs.

Most of the developing world's cities are under threat from a potentially lethal cocktail of growing social, economic, environmental, and human problems. Even in its expanded role, the PPPUE program can only scratch the surface. But the concept of using a public-private approach to provide business solutions, not aid, to this situation is one that offers real prospects for a breakthrough.

#### THE HONOURABLE J. HUGH FAULKNER

The Honourable Hugh Faulkner has occupied a number of distinguished positions in both the private and public sectors. As a public official he has had a number of important portfolios, including having been Minister of State, Minister of Indian Affairs, and Minister of Natural Resources for Canada. He has been the Secretary General of the International Chamber of Commerce and Executive Director of the Business Council for Sustainable Development. In the private sector, he has also held a number of important posts, including Vice President of Alcan Canada and President and Chief Executive Officer of its operations in India.

## *Section V: A Cautionary Note*

This section summarizes the main points of the volume by discussing them in the context of prevailing myths about the private sector which need to be eliminated if it is to assume a more realistic and constructive role in sustainable development. The section also makes the case for strong governance as a precondition for an effective role for the private sector and other sectors of civil society.

## The Private Sector as a Panacea and Other Myths

Luis Gomez-Echeverri  
United Nations Development Programme  
Yale/UNDP Program on Public-Private Partnerships

### ABSTRACT

This chapter cautions that the potential role of the private sector in most parts of the developing world will not be realized automatically or easily unless a number of steps and attitudinal changes take place. The private sector is neither savior nor villain—as often attributed by policy-makers—but rather is an important source of talents, skills, and resources to be tapped in support of sustainable development. More importantly, the best instances of private sector intervention will happen where there is good and strong governance, which in turn leads to strong partnerships between the two sectors. The private sector cannot and will not replace the State, but rather should complement and strengthen it by working in those areas in which the State does not have the resources, management skills, or technology to attend to the needs of the population. The international system is grossly driven by the “green agenda”—global concerns such as ozone depletion, climate change, and loss of biological diversity—often at the expense of the “brown agenda”—problems of pollution, poverty, and urban environmental hazards—and the environmental priorities of developing countries. It is the private sector, ironically, that will most likely come to the rescue to make the agenda more balanced, by forcing the international system to become more engaged in the most urgent and sometimes daunting economic and social problems of developing countries.

### THE CHANGING WORLD SYSTEM

The end of the Cold War, along with globalization and the technological and information revolution, have resulted in such drastic changes in the international system that they are yet to be understood and their implications fully recognized. Traditional roles often assigned to various sectors of society are being so radically changed that many people are wondering whether some of these sectors will even continue to exist in their present form.

One example is the current speculation about the role of the State and, by implication, the roles of all other sectors of civil society. A recent publication bearing the title *The End of the Nation State* (Guehenno 1993) and another on *Megatrends in Asia* (Naisbitt 1997) both predict a diminishing role for the State to the point of being unrecognizable from the one known today. Its traditional role, it is claimed by the authors, will be filled by networks which are more abstract, more mobile, and thus, less accountable.

Two examples of such networks are represented by overseas Chinese and overseas Indians. In each case, they command a powerful and shocking influence on their motherland and on the interna-

tional economy. It is estimated, for example, that approximately 80% of all foreign investment in China is undertaken by overseas Chinese. In the case of the Indian overseas network, their influence is equally impressive. It is estimated that some 10 million Indian nationals living overseas have a combined income of some \$340 billion, equivalent to India's entire income with more than 900 million people (Naisbitt 1997).

It is doubtful that what is taking place in Asia today can provide a useful model on the basis of which to project near term trends in other parts of the developing world and even less to project future roles for the private sector or the State. The contrast between the Asian region on which some of the future trends are based—a region which has gone from rags to riches in the last 50 years—and most of the rest of the developing world is frightening. It is by looking at this contrast that one comes away with the conclusion that at least in the immediate future, it is the State, a strong State, that will have to have the responsibility of seeking a better future for most of the population of the developing world.

According to the most recent UNDP Human Development Report, approximately one quarter of the population of the world lives in a state of extreme poverty. Many, about 950 million, are income poor while living in areas of Asia now considered some of the fastest growing and richest in the developing world. In Sub-Saharan Africa, it is estimated that by the year 2000, about half of the population will be income poor. While a few countries in Asia appear to be thriving, in more than 100 developing and transition economies the failures of growth of the last 15 to 20 years have caused decreases in the standards of living equivalent to those suffered during the Great Depression of the 1930's (UNDP 1997).

#### THE POTENTIAL ROLE OF THE PRIVATE SECTOR

The reconfirmation of the need for a strong State—and improved governance in developing countries—does not in any way diminish the argument for a strengthened role for the private sector in sustainable development. In fact, it reinforces it. Evidence shows that some of the greatest successes of private sector intervention are in those countries where there has been a traditional strong partnership between government and the private sector. Japan and other countries in East Asia are the best examples of how this has taken place.

One of the most convincing arguments for seeking a strengthened role for the private sector in sustainable development in developing countries has to do with the magnitude of their development challenge in the coming decades. One clear example of this chal-



challenge is the urban growth that is expected to take place in the developing world in the next few decades. According to the most recent World Resources Report, the urban population of the world is expected to double to more than 5 billion people in the next 35 years. According to this report, 90% of this growth will take place in developing countries (World Resources Institute 1996-97). In Asia alone, the urban population is expected to grow by some 600 million (Naisbitt 1997).

This explosive growth is taking place at a time when governments and local authorities are not able to cope with the needs of the present populations. As a result, over 220 million people living in cities lack access to clean drinking water, over 430 million do not have access even to the most rudimentary latrines, and the health of the population of most cities in developing countries is threatened as a result of the fact that most solid waste is never collected but instead remains in streets, empty lots and drains (Naisbitt 1997).

It is evident that governments and municipal agencies alone will never be able to cope with the growing demands. A partnership with the private sector, at least in the urban areas, is no longer an option but a necessity. It is only with the assistance and participation of the private sector that most developing countries will be able to meet the growing needs of urban dwellers and, in the process, address the most pressing sustainable development challenge of the 21st century.

Another argument for seeking a strengthened role for the private sector in sustainable development in developing countries has to do with the magnitude of the resources which are now being made available through private means, and the even larger amounts which can be made additionally available given the right incentives and opportunities. This raises questions not only of an opportunity cost nature (e.g., how can countries direct some of these resources so that they can be truly supportive of sustainable development), but also about the effects that present investments are having and will have on sustainable development in the years to come.

There are some people who believe, for example, that the growth that is taking place in some parts of the world such as in Asia, and the consumption patterns and technologies being introduced there, will have long lasting effects on the type of global environment we experience in the coming decades. But Asia is not alone in this regard. The investment decisions now being made by the private sector in Latin America are locking these countries into capital equipment and technologies which will need to be amortized over the coming decades, regardless of the environmental or consumption pattern effects. Only a better understanding of these private

sector flows and their motivation will allow us to play a more active role in trying to ensure that they are supportive of sustainable development goals.

#### MYTHS ABOUT THE PRIVATE SECTOR

In order for the private sector to become an ally, contributor, and partner in the task of sustainable development, several myths must be eliminated from the discourse of policy-makers, development practitioners, and business people around the world:

MYTH 1: THE TRANSFORMATION OF THE INTERNATIONAL SYSTEM OF RECENT YEARS, GLOBALIZATION, AND THE TECHNOLOGICAL AND INFORMATION REVOLUTIONS ARE RESULTING IN A WORLD IN WHICH THE STATE WILL INCREASINGLY PLAY ONLY A MARGINAL ROLE.

Of all of the myths, this is potentially the most destructive and the most distracting. For most people in the world, if not all countries, there is a need—an urgent need—for the state and government—good government—to become stronger, not bigger, and more responsible, in order to ensure that the development taking place is environmentally and socially equitable, and that the more disadvantaged sectors of society in developing countries (a not unimportant figure given that a quarter of the world's people remain in severe poverty [UNDP 1997]) are properly protected and supported.

MYTH 2: THE INCREASINGLY ACTIVE AND VERY POSITIVE ROLE AND IMPACT OF THE PRIVATE SECTOR IN SOME DEVELOPING COUNTRIES PROVES THAT THERE IS A DECREASING NEED FOR GOVERNMENTS AND OFFICIAL DEVELOPMENT ASSISTANCE (ODA).

This is simply not true; more importantly, it is grotesquely wrong. As this publication shows, the most important successes of private sector interventions are taking place where there is a strong partnership between the State and Business, and in all cases this has been made possible by the existence of strong policies, institutions, and legal systems, many of which have been developed over the years with the assistance of ODA which has helped reduce the initial risk associated with environmentally related investments.

MYTH 3: THE EXPONENTIAL GROWTH IN PRIVATE-SECTOR FLOWS FROM OECD COUNTRIES TO THE SOUTH IS PROOF THAT THE PRIVATE SECTOR IS THE MOST IMPORTANT ACTOR IN DEVELOPMENT EFFORTS TODAY.

This may be true for only 5% of developing countries. The other 95% are being simply by-passed, ignored, or intentionally avoided. For this 95% it simply represents a potential to be explored and realized, and one that will never take place unless people's, governments', and the international system's attitudes and institutions change to help make this happen (Gentry and Esty, this volume).

MYTH 4: WHERE THE PRIVATE SECTOR IS PLAYING AN IMPORTANT ROLE, IT IS SHOWING THAT IT CARES ABOUT PEOPLE AND ABOUT THE ENVIRONMENT.

While this may be true for some companies around the world and for managers of some businesses, these are not the driving reasons for business to undertake good environmental management and good investment. The reasons are quite different, and they have more to do with the fact that doing good environmental management and good development-related investment may actually result in higher profits and a better image (and thus greater markets) for their companies. The more quickly we do away with the myth that businesses need to become altruistic, the sooner we can all get down to the business of working in partnership with the private sector to make them more responsible actors, investors, decision-makers, and community members (Schmidheiny et al., this volume).

MYTH 5: COUNTRIES AROUND THE WORLD ARE GEARING UP TO COPE WITH A NEW INTERNATIONAL AND GLOBALIZED SYSTEM IN WHICH THE PRIVATE SECTOR CAN PLAY A MORE IMPORTANT ROLE.

Most governments around the world are acting as if it is business as usual. In the process, they are not only in default of their responsibilities (which in the short term is not so serious given that others will take their place) but what is more important, they are not helping people in their countries benefit from the potential rewards of this new international system. Instead their people are suffering most of the negative effects of globalization.

MYTH 6: INTERNATIONAL ORGANIZATIONS, THOSE MOSTLY RESPONSIBLE FOR ADVISING DEVELOPING-COUNTRY GOVERNMENTS AROUND THE WORLD, ARE GEARING UP TO COPE WITH A CHANGING WORLD.

Most international organizations are talking of major reform. Few are acting on it. Most are designed to work almost exclusively with governments, even in areas where governments have little say, few resources to allocate, and, what is more important, little business being there in the first place. International organizations potentially have a key role, which is not always recognized, as advisors to developing countries. This role will never be realized unless these organizations are properly supported in their reform projects and properly funded. International organizations can and should play a crucial role in helping countries make optimal use of private sector resources.

**MYTH 7: SUBSIDIES THAT DISTORT THE ECONOMY, PREEMPT A PROPER ROLE FOR THE PRIVATE SECTOR, AND CONTRIBUTE TO BAD ENVIRONMENTAL MANAGEMENT OCCUR EXCLUSIVELY IN DEVELOPING COUNTRIES.**

It is true that the developing world is spending billions in subsidies that are not always helpful to the environment and that are providing disincentives to sustainable development. But OECD countries are equally responsible for billions in subsidies to water, agriculture, energy, and road transport that are causing severe damages to the global environment, to the economy of many disadvantaged countries of the developing world, and to the harmony of the international system.

It is estimated that developing countries lose about \$60 billion a year from agricultural subsidies and barriers to textile exports in industrial countries, for example (UNDP 1997).

**MYTH 8: THE POTENTIAL ROLE OF THE PRIVATE SECTOR IS DIFFICULT TO REALIZE IN MANY COUNTRIES BECAUSE OF PEOPLE'S TRADITIONAL VIEWS REGARDING WHAT AREAS ARE THE RESPONSIBILITY OF GOVERNMENTS AND WHAT AREAS SHOULD BE LEFT TO THE PRIVATE SECTOR.**

People's views on these matters have varied greatly, geographically as well as over time. In some parts of Asia, for example, individuals are offended by some of the assumptions of the welfare system. In these countries, social needs are covered through individual savings rather than dependence on the State. This has not meant diminished roles for the State, however (Naisbitt 1997). In several of these countries some of the strongest partnerships are found between the private and the public sectors and have led to thriving economies.

**MYTH 9: INVESTING IN ENVIRONMENTALLY RELATED PROJECTS IS A RISKY, UNPROFITABLE BUSINESS.**

Some 10 years ago this would have been one of the most difficult myths to debunk. Fortunately, the experience of the past decade and especially of the past five years has shown the weakness of this myth. It is estimated that environment-related funding needs for the world will rise from \$100 billion today to some \$640 billion by 2025. Of these, some \$350 billion alone will have to be dedicated to water supply, sanitation, power, and transport infrastructure in the next 13 years, most of it in developing countries (Panayotou, this volume). The magnitude of these opportunities—coupled with efforts of governments to embark on ambitious liberalization, deregulation, and privatization schemes including innovative financing arrangements—make some of these opportunities some of the most exciting and important private-sector potential contributions in the years to come (Panayotou, this volume).

Rather than embarking on large debt and depending on public resources, countries should do everything within their power to ensure that most of these needs are met by equity investment and by the private sector.

**MYTH 10: THE MAIN SOURCE OF FINANCE FOR DEVELOPMENT IN DEVELOPING COUNTRIES IS EXTERNAL FINANCE.**

Not true. The main source is in fact internal finance. In 1994 gross savings in low and middle-income countries amounted to some \$1.4 trillion. That same year, external net resource flows consisting of ODA, export credits, and private capital flows amounted to approximately \$184 billion (Pearce, this volume). Internal finance sources contributed, therefore, seven times as much as external resources.

**MYTH 11: THE MARKET MECHANISM ALONE, IF LEFT FREE TO ACT, WILL ENSURE THAT FINANCIAL FLOWS BECOME ENVIRONMENTALLY AND SOCIALLY SENSITIVE.**

The urgent need to address the underlying mistaken assumptions of this myth is the most important argument for building strong partnerships between the public and the private sectors and for the strengthened roles of the State and for ODA. Modifying private financial flows to be more environmentally and socially sensitive requires not only meeting environmental standards and doing environmental impact assessments, but also making available technologies that are more environmentally friendly and sound for the problems being addressed. These will only be adopted where

there are proper policies in place and where there are efforts to make conventional technologies less attractive by forcing them to meet their full economic and environmental costs (Pearce, this volume).

**MYTH 12: MANY ENVIRONMENTAL BENEFITS HAVE NO MARKETS AND AS A RESULT, NO INVESTMENT WILL EVER TAKE PLACE SINCE NON-MONETARY BENEFITS (E.G., FROM WATERSHED PROTECTION, BIODIVERSITY CONSERVATION, OR FIXING OF CARBON DIOXIDE), AS ATTRACTIVE AS THEY MAY BE, PROVIDE NO CASH FLOW.**

The private sector is helping to destroy this myth. Through creative instruments such as intellectual property rights (IPRs) in the Convention on Biodiversity and carbon offsets through Activities Implemented Jointly (AIJ) in the Climate Change Convention (a scheme where an emitter of carbon dioxide—or technically, any greenhouse gas—buys emissions reductions or carbon fixation in biomass in another location [Strong and Pearce, this volume]), the private sector is showing that it is ready to explore and experiment in new areas where only non-monetary benefits existed in the past (Schmidheiny et al, this volume).

**MYTH 13: PUSHING FOR HIGHER PRODUCTIVITIES IN THE MAIN COMMODITY INDUSTRIES IN DEVELOPING COUNTRIES WILL RESULT IN ENVIRONMENTAL DEGRADATION.**

Pushing for higher productivities will result in a more optimal use of resources, which in turn will result in less waste, reduced need for additional resources, and better economic returns. The best example of this is the plantation industries in developing countries, where up to 90% of the biomass and potential products that could be commercialized are never exploited, and never reach the markets, but are instead discarded or simply wasted (Pauli, this volume).

**MYTH 14: GIVEN THE RIGHT MARKET MECHANISMS, FINANCIAL MARKETS WILL AUTOMATICALLY WORK IN SUPPORT OF SUSTAINABLE DEVELOPMENT.**

The urgent need to address this myth has two main sources: the magnitude of the resources that financial markets represent (the world stock market and world bond market capitalization in 1993 and 1994 totaled some \$31 trillion—five times the Gross National Product of the United States) and the fact that what financial markets often reward and encourage (short-term goals, undervaluing environmental resources, discounting the future, and favoring accounting and reporting systems that do not reflect environmental

risks and opportunities) are not automatically conducive to sustainable development (Schmidheiny and Zorraquin, this volume).

**MYTH 15: THE PRIVATE SECTOR IS, FOR THE MOST PART, RELUCTANT TO ADOPT SUSTAINABLE DEVELOPMENT PRACTICES AND IS NOT IN FAVOR OF ECONOMIC INSTRUMENTS AND ENVIRONMENTAL STANDARDS.**

Some of the most enlightened business leadership around the world, e.g. those belonging to the World Business Council for Sustainable Development and others, are in fact encouraging the introduction of better frameworks that could make business more supportive of sustainable development. Yes, business leaders prefer systems that allow for freer and more open markets. But they are also calling for the adoption of better systems of international environmental standards and for economic instruments that reward good environmental behavior (Schmidheiny et al, this volume).

### THE ENABLING CONDITIONS

The myths presented here represent some of the serious obstacles to a greater and more positive collaboration of the private sector in sustainable development. Debunking these myths would open the way for a more realistic and fruitful dialogue. It would also help to bring down to reality those who think that the private sector can do everything, as well as those who think that the private sector can never be trusted. As long as these views prevail, the proper role of the private sector will never be fully realized.

But eliminating the myths will only be a beginning. Hopefully, what will result is a change of attitude which will make governments, communities, international organizations and others more open to the private sector and its potential role in sustainable development. This change of attitude will hopefully also result in the necessary changes in policies, legislation, education and training, and institutions in general to account for this important new partner.

The evidence suggests that there are still many obstacles for the private sector to overcome, some simpler than others (Faulkner, this volume). Evidence also suggests, however, that there are some fascinating successes in partnerships now being played throughout the developing world that need to be carefully watched and supported (Faulkner, Garcia, this volume).

The evidence presented in the articles in this publication also suggests that the most important contributions of the private sector in support of sustainable development will occur where there is a proactive program to make this contribution more productive and useful.

The most common elements of such a pro-active program are:

#### GOOD LOCAL GOVERNANCE

The countries where the private sector appears to thrive and play a more responsible and supportive role in sustainable development are those where there is a strong and responsible government and good governance. Good governance leads to assigned and clear roles for the public and private sectors and this is conducive to strong partnerships.

#### A WELL INFORMED SOCIETY

A well informed society that demands that which is clean and safe, in both the environment and consumer products, is the best guarantee of responsible behavior by the private sector. No government, no regulation, no policy can replace this important element.

#### A CONDUCIVE POLICY FRAMEWORK

Setting clear and easy-to-administer rules of the game is an important pre-condition for the private sector to invest, to take risks, and to become engaged. While some regulatory frameworks will always be required, what is more effective is a set of incentives that give the right signals and the right rewards for engagement in activities that are supportive of sustainable development.

#### STRONG SUPPORTING INSTITUTIONS

Establishing and running businesses profitably is a difficult and complicated task. It is a task that is best carried out with the support of local and national institutions which can provide, among other things, useful and necessary data, well trained and skilled workers, good maintenance of equipment, efficient and reliable supply of materials, effective transportation, adequate financial and banking support, and good communications.

#### ADEQUATE FINANCIAL INSTRUMENTS

No business can operate successfully if there is no effective, transparent, and reliable system of financial instruments available to facilitate exchange and to provide resources, in a timely manner, required for business operations and business development.

#### A FREE AND OPEN TRADE SYSTEM

No business will be interested in establishing itself if it cannot provide products and services for profit. In order for this to take place, there must be ample space and opportunity to sell and trade. This includes creating a fair and open international system of trade that gives equal opportunity to all.



## CONCLUSION

This year the General Assembly of the United Nations will hold a special session to review progress since the Earth Summit in 1992. It is an important event simply because it will review one of the most important historic gatherings ever held by the United Nations and the international community. The Earth Summit changed many things, a fact sometimes not properly recognized by people around the world. The Earth Summit changed the way the UN did business. Thanks to the visionary work of Maurice Strong, Secretary General of the Conference, who saw the need to make the UN proceedings more democratic and more participatory, it is now common practice in the UN to see citizen groups, NGOs, and other interested groups walk through the halls and attend important meetings where they can voice their opinions and concerns. Today, it seems a normal and necessary practice. Five years ago, this was unthinkable.

The Earth Summit also made the development agenda more balanced, in favor of one which attended more adequately to the needs of people around the world. The Earth Summit was not a conference only about the environment. It was also not a conference only about economic growth or poverty eradication. It was instead a conference which brought all of these concerns together into a more robust and integrated approach to development. Five years later and into the future, the challenge remains to translate the vision of the Earth Summit into real projects. This volume argues for the critical role that the private sector can play in moving toward sustainable development in partnership with the public sector.

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## LUIS GOMEZ-ECHEVERRI

Luis Gomez-Echeverri is currently the Director of the Public-Private Partnerships Programme at UNDP. This programme is designed to promote a constructive role for the private sector in developing countries' efforts for a better environment. Mr. Gomez-Echeverri is also co-director of the Program on Public-Private Partnerships at Yale University's School of Forestry and Environmental Studies. At UNDP, Mr. Gomez-Echeverri has served in a number of senior posts with responsibilities in many countries, most recently as director of the Environment Programme at UNDP.